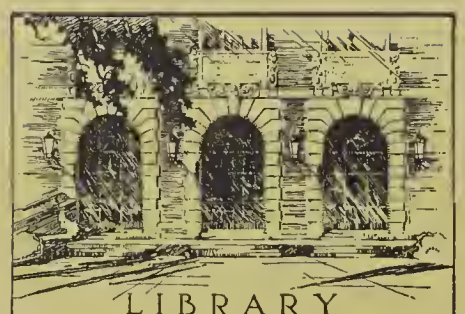

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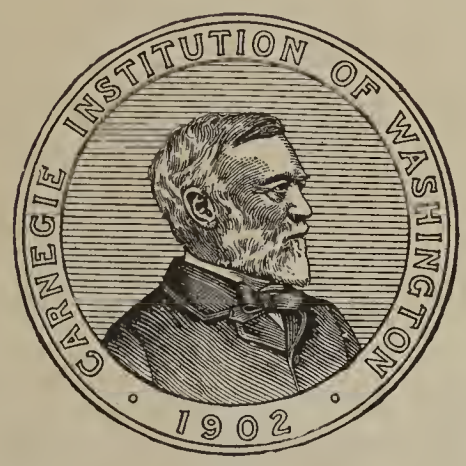
TULUM

TULUM

AN ARCHAEOLOGICAL STUDY OF THE EAST COAST OF YUCATAN

BY

S. K. LOTHROP



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TULUM

AN ARCHAEOLOGICAL STUDY OF THE EAST COAST OF YUCATAN

INTRODUCTION.

This book is the result of three expeditions of the Carnegie Institution of Washington to the east coast of Yucatan, under the direction of Dr. Sylvanus G. Morley. The writer desires to acknowledge his indebtedness to the authorities of the Carnegie Institution who have made possible the collection of data and its publication, especially President Merriam and ex-President Woodward.

Owing to local conditions, the working time at the various sites described was reduced to a minimum; the large amount of material here presented is therefore due to specialization of work and to the individual records made by the personnel of the various expeditions. Dr. Morley has not only had the task of organizing the work, but has contributed measurements and observations on every site visited; Mr. O. G. Ricketson made the surveys for the maps of Tancah, Xelha, and Tulum; Messrs. Arthur Carpenter and Juan Sopeña have served as photographers; Dr. T. W. F. Gann and Mr. John Held have both contributed copies of frescoes from Tulum.

My thanks are also due to Professor A. M. Tozzer, of Harvard University, for permission to reproduce specimens in the Peabody Museum and for much kindly advice. Stela 1 at Tulum is reproduced from photographs that Mr. T. A. Joyce, of the British Museum, was good enough to send me. Professor M. H. Saville, of the Museum of the American Indian, Heye Foundation, has placed his library at my disposal and has aided me with helpful criticism. Dr. Glover Allen, of Harvard University, has identified various animal bones, and Dr. O. F. Cook, of the U. S. Department of Agriculture, has identified the vegetable forms on the Tulum wall paintings. Finally, I am indebted to my wife and to Mr. Fiske Warren for much practical help in the preparation of the manuscript.

The east coast of the peninsula of Yucatan, from Cape Catoche to the borders of British Honduras, is one of the wildest and least-known parts of the New World, for the aborigines, though once conquered, have regained their independence and do not welcome the presence of strangers. Centuries of oppression and decades of barbarous warfare, and more particularly recent attempts to exterminate the Indian, have long rendered this coast unsafe except for large armed parties. But a truce declared a few years ago between the Indians and the Mexican government has made possible the collection of the data on which this work is based.

Like the greater part of Yucatan, the east coast is composed of Recent coralline limestone covered by a thin, rocky soil on which grows a tropical forest. This growth, however, is not so high as that encountered farther south in Guatemala and Honduras, where the rainfall is heavier. The shore is usually a strip of white coral sand which is replaced at times by swamp and mangrove. From Ascencion Bay northward there are stretches of limestone cliff fronting the sea; the highest piece of cliff apparently is that on which the city of Tulum stands. From a hundred

yards to a mile offshore is a barrier reef which parallels almost the entire coast and shelves off sharply into deep water. The narrow passages through the reef and the shoal water within necessitate the use of small, shallow-draft boats. Travel by land is scarcely feasible at present.

FIG. 1.—Map of eastern Yucatan, showing location of ruins.

Off the northern portion of the east coast lies a string of islands which are geologically similar to the mainland: Mugeres, Contoy, Cancuen, and Cozumel. These islands were inhabited before the coming of the Spaniards.

Of the interior we can say little, for it is unexplored. It appears to be a vast forest-covered plain stretching to the cultivated area of Yucatan on the north

and to the jungles of the Peten on the south. Rumors of large ruined cities have reached the coast, but no white man has seen them.

Tulum, the principal ruin on the east coast, lies midway between Ascencion Bay and the island of Cozumel. First described by Stephens,[1] it has been visited by expeditions of the Carnegie Institution in 1916, 1918, and 1922. It has also been briefly described by Howe,[2] Holmes,[3] and Prince William of Sweden.[4]

Exploration of other sites has been undertaken by the Carnegie Institution, Stephens, Holmes, Howe, Le Plongeon, and Arnold and Frost. The Peabody Museum of Harvard University has surveyed several sites on the north part of the coast, but the results have not been published.

The greater part of our material concerns the ruins of Tulum. Other and lesser sites have also been included, even when our notes were meager. In addition, we have summarized previous publications covering the places not visited by the Carnegie Institution expeditions, so that this work includes everything available at the time of writing concerning the east coast of Yucatan.[5] The ruins discussed are:

Tulum	Playa Carmen	Cozumel:	Nohku
Tulum Playa	Nisucte	San Miguel	Canche Balam
Tancah	El Meco	El Cedral	Chacmool
Xelha	Kantunil	San Benito	Cancuen
	Mugeres	Cacakal	

To the reader interested in the broader aspects of east-coast archæology, the first three and the last chapters are recommended. These deal with the history, architecture, and art of the region and with such chronological and cultural problems as may be analyzed in our present state of knowledge. The rest of the book is devoted to a detailed description of the edifices at Tulum and other cities which have been studied.

A word must be said about chronology. The Maya recorded time by several systems. The most accurate of these, the Initial Series or Long Count, is a count of days from a given starting-point. Any date of this type is absolute within the Maya system. A second method made use of the hotun, lahuntun, and katun (approximately 5, 10, and 20 year) periods, which, in combination with the day and month and their numbers, gave dates fixed for considerable periods of time, but which by repetition could give rise to confusion. This system corresponds to our custom of writing '23 for 1923. We now know which century is intended by '23, but in a thousand years it can only be determined by a study of accompanying data. Thus, in Maya inscriptions the stylistic sequence is often of great importance in interpreting the date. A third type of Maya date is based on the number of the day (which is always Ahau) on which the katun (20-year) period ended. As the numbers 1 to 13 in turn are associated with the day Ahau, the sequence could not

[1] Incidents of travel in Yucatan, vol. II, pp. 387–409.
[2] Am. Anth, n. s., vol. XIII, pp. 539–550.
[3] Archæological studies among the ancient cities of Mexico, vol. I, pp. 75–78.
[4] Between two continents, pp. 106–118.
[5] The surveys of the following ruins were made entirely by Dr. S. G. Morley: Tulum Playa, Playa Carmen, El Meco, Cancuen, Cacakal, Nohku, Canche Balam, and Chacmool.

return until 13 times 20, or approximately 260 years. This system is typically found in Yucatan.

A second problem in regard to dates is the correlation of Maya and Christian chronology. Although within themselves both systems are accurate to the day, the correlation of one with the other is still a subject of controversy. At present two hypotheses seem worthy of serious consideration. One theory, advanced by Bowditch and Joyce, places the beginning of cycle 9 of Maya chronology in 94 or 95 B.C.; the other, advanced by Morley and Spinden, places it in 176 A.D. There is, then, a difference of 270 years between them. In this book we have followed the Morley-Spinden correlation. To the reader interested in this subject, we recommend the writings of Mr. S. G. Morley.[1]

The usually recognized large divisions of Maya history are as follows:

OLD EMPIRE.

I. *Early Period.*
——— to 9. 10. 0. 0. 0 (373 A.D.)
II. *Middle Period.*
9. 10. 0. 0. 0 to 9. 15. 0. 0. 0 (472 A.D.)
III. *Great Period.*
9. 15. 0. 0. 0 to 10. 2. 0. 0. 0 (610 A.D.)

RENAISSANCE.

I. *Colonization Period.*
9. 13. 0. 0. 0 (433 A.D.) to 10. 6. 0. 0. 0 (689 A.D.)
II. *Dark Ages.*
Katun 8 Ahau (689 A.D.) to Katun 4 Ahau (985 A.D.)
III. *League of Mayapan.*
Katun 4 Ahau to Katun 8 Ahau (1201 A.D.)
IV. *Toltec Period.*
Katun 8 Ahau to Katun 8 Ahau (1458 A.D.)
V. *Final Period.*
Katun 8 Ahau to Katun 11 Ahau (1556 A.D.), by the end of which Yucatan was conquered.

[1] The inscriptions at Copan, Carnegie Inst. Wash. Pub. No. 219, appendix 11. Also, An introduction to the study of Maya hieroglyphs, Bu. Am. Ethn. Bulletin 57.

CHAPTER I.

HISTORY OF THE EAST COAST OF YUCATAN.

The Maya civilization, as disclosed by archæological remains, emerged from barbarism in the first ten centuries before Christ. During this epoch the Maya gathered the fundamental resources for the great expansion which took place at the beginning of the Christian era. In the first six centuries after Christ they occupied, built, and dwelt in a host of great cities extending from the Gulf of Mexico to the Bay of Honduras: Tikal, Copan, Quirigua, Naranjo, Nakum, La Honradez, Piedras Negras, Palenque, Comalcalco, and others scarcely less important but too numerous to mention. Why and how this sudden expansion took place we can not explain, though the vast remains of jungle-buried cities bear silent witness to the vigorous and complex organization of the civilization which produced them. Centuries later the Maya again rose to a high plane, the Toltecs, Zapotecs, and Aztecs also created distinctive cultures, and important centers flourished in Peru; nevertheless, the apogee of American cultural achievement still remains the final phase, the Great Period, of the Maya Old Empire.

During the time between 9.18.10.0.0 and 10.2.0.0.0 of Maya chronology (541–610 A.D.), the Old Empire cities were successively abandoned and the Maya moved westward to the adjacent plateau areas or northward and eastward into Yucatan.

The reasons for this great migration, which involved millions of people, are unknown, but have been the subject of speculation; earthquake, pestilence, war, intellectual and moral exhaustion, change of climate, and failure of agriculture have all been suggested. The theory of agricultural failure, advanced by O. F. Cook[1] on the basis of studies among the Maya Indians of to-day in Guatemala, has found the greatest number of adherents. We doubt, however, if such a vast movement of population could be caused by a single factor; yet, if we accept Cook's theory of diminishing agricultural returns, we can postulate the usual results of famine in civilized countries, namely, social unrest and perhaps civil war, followed in turn by less production and intensification of the food problem. This cycle is one which has operated the world over. It has overturned complex social systems and has decimated populations; but it does not explain a migration en masse of an agricultural people with a heavy investment in huge cities constructed of stone and concrete. This problem is of major importance because its solution may cause the resettlement and opening to productivity of the thousands of square miles involved.

Long before the downfall of the Old Empire, in fact by the beginning of the Great Period, the Maya had discovered and formed settlements in the peninsula of Yucatan. Native tradition preserved from the epoch of the Conquest carries us back to this period. Our information is derived from certain Spanish records and from the so-called Books of Chilam Balam, certain chronicles written by natives in their own tongue and the Spanish alphabet. Although dating from after the Conquest, it is supposed that they preserve traditions recorded in the aboriginal

[1] Vegetation affected by agriculture in Central America. U. S. Bureau of Plant Industry, Bulletin 145.

manuscripts which were burned in great numbers by the fanatical Spanish clergy. Only a small part of the material available has been translated, and what is now known deals not with the east coast but with the history of the Cocom, Xiu, and Itza clans, the rulers of Mayapan, Uxmal, and Chichen Itza. From these strictly family records it is dangerous to generalize too widely. No manuscript dealing with the east coast is now extant, although one formerly existed in Tihosuco in the province of Cochua.

The movement of population from the Old Empire cities flowed in two main currents, known to the Maya as the Cenial, or Little Descent, and the Nohenial, or Great Descent.[1] The first Maya to reach the east coast of Yucatan probably were those who formed the Cenial. The Books of Chilam Balam[2] tell us that the Xiu settled in the province of Ziyan caan or Bachalal during either Katun 6 ahau or Katun 8 ahau, where they remained threescore years.[3] According to the correlation system we follow, these dates are 9.13.0.0.0 and 9.14.0.0.0 in the Long Count, or 433 and 452 A.D.

The province of Ziyan caan or Bachalal is believed to be the territory near Bacalar lagoon. In this vicinity are the ruins of El Porvenir, Rio Bequé, Ramonal, etc., which are believed to date from this period. It is evident, however, from stela 1 at Tulum, the date of which is probably 9.13.10.0.0, that settlements extended well up the coast. The Cozumel stela, undated but stylistically similar to stela 1 at Tulum, may indicate that the island of Cozumel was occupied at this time. Other early settlements were made at Chichen Itza and at Xcalumkin on the west coast.

Although it is evident that the earliest Maya settlements in Yucatan long antedated the desertion of the great cities of the south, it is possible that the causes which later led to the complete abandonment of the older cities had already begun to make themselves felt. At any rate, it seems certain that this was a period of social change, for we read in the Chilam Balam of Chumayel[4] the statement that "at that time they were marvellously improved by the fathers." From this we may perhaps infer that the settlements on the east coast were by-products of social revolution in the cities of the south.

The Nohenial, or Great Descent, probably refers to a great outpouring of tribes from the Usumacintla region into southwestern Yucatan, which commenced, if we can correlate it with the cessation of dated monuments, about 9.18.10.0.0 and was completed probably within a hundred years. This great influx appears to have unsettled the small towns already founded by the Cenial, for we learn that Chichen Itza was abandoned.

The Maya now entered their Dark Ages, an epoch during which there were unrest, wandering, a series of temporary settlements, and probably much unrecorded

[1] "They (the Spanish priests) knew that the natives came in part from the east and in part from the west. . . . . In old times they called the east 'Cenial, The Little Descent,' and the west 'Nohenial, The Great Descent,' referring to the few people who came on the one side and the multitude who came on the other, whoever they may have been." Lizana, 1893, p. 3.

[2] The Mani and Tizimin manuscripts record this event. See Brinton, 1882, pp. 100 and 144.

[3] Mr. S. G. Morley (The inscriptions at Copan, p. 503) places this event in Katun 4 ahau.

[4] Brinton, 1882, p. 180.

fighting. They did not again enter a period of cultural advance for nearly 300 years. By the year 1000 A.D., however, three great cities—Mayapan, Uxmal, and Chichen Itza—had emerged from the chaos we have described and had entered into a formal agreement by which they jointly undertook to rule the land.

There was thus inaugurated the "League of Mayapan," which endured for nearly two centuries. It was the Golden Age of Yucatan. Again the Maya built great stone cities and again the arts flourished. In the year 1201 war broke out between Chichen Itza and Mayapan. The latter called in Toltec mercenaries from Mexico, and with their aid Chichen Itza was conquered and turned over to the Toltecs as a reward for their services. As a result of the victory, the rulers of Mayapan—the Cocomes—claimed the overlordship of the entire peninsula.

The succeeding century was one of conflict, in which the Itza endeavored to regain their lost power. Proving unsuccessful in this, they returned to their former homeland in the south, where they built their capital—Tayasal—on an island in Lake Peten. Meanwhile, in Yucatan the Cocomes had consolidated their power, causing discontent by their arrogance and tyranny. In the fifteenth century, Uxmal, the third member of the league, headed a great confederacy which finally succeeded in capturing and destroying the city of Mayapan and in killing off the Cocom family with the exception of one who was absent in Mexico. This event really marks the downfall of the Maya civilization.

The Tutul Xius, the hereditary rulers of Uxmal, were soon forced to abandon their capital and withdraw to Mani, which means "it is finished." The country was split into numerous small principalities which constantly preyed on one another. Pestilence, famine, and civil war brought desolation in their wake. Such was the country encountered by the Spaniards.

In this summary of Maya history very little has been said of the east coast. We have seen, however, that it was settled by the Maya, who apparently found it uninhabited, during the Cenial, or Little Descent. The settlements thus made have left no remains except stela 1 at Tulum and perhaps the Cozumel stela. So we judge that they were not permanent, but that the inhabitants were swept away by the unrest of the Dark Ages. New settlements arose on the east coast during the period of the League of Mayapan and flourished until the conquest of that region by the Spaniards in 1544. They are the cities described in this work.

The Mexican allies introduced by the rulers of Mayapan brought with them cultural features which permeated to the east coast, as we shall see later. In addition, it is probable that some of these strangers actually settled in the region we are discussing. This assertion is based on documents concerning a lawsuit in Valladolid in the year 1618, when a native named Juan Kahuil made claim to descent from an invader mentioned by name and was sustained by several witnesses. One of these witnesses testified:[1]

"He heard his father and other leading Indians say that the parties above mentioned in the first question came from the kingdom of Mexico to found towns in these provinces; some remained in Chichen Itza, who were those who built the sumptuous

[1] Brinton, 1882, p. 117.

edifices which are in the said locality; others went to found towns at Bacalar, and others went to found towns on the coast to the north; and he who went to found towns on the coast was named Cacalpuc, from whom proceeds the said Don Juan Kahuil, and those who thus made division went to found towns in the above-mentioned provinces, and held them under subjection and government; and he chose a certain Cocom to rule in Chichen Itza, and they obeyed him as lord, and those of the island of Cozumel were subject to him. . . . . Those who came from Mexico were four kinsmen or relatives with their friends and the people they brought with them; one settled, as heretofore said at Chichen Itza, one went to settle at Bacalar, one went towards the north and settled on the coast, and the other went towards Cozumel; and they founded towns with their people, and were lords of these provinces, and governed them and ruled them many years. . . . ."

THE EAST COAST AT THE TIME OF ITS DISCOVERY.

"They say that in the time of the infidelity of its natives," writes Cogolludo,[1] "this province or kingdom of Yucatan did not have one common name by which they knew its boundaries and territory; because as it was subject to different lords . . . . each one placed his name to the different parts where he lived. . . . . But formerly it had all been subject to one lord and king . . . . and so all this land used to be called Mayapan." The same author in other places and also other writers state that Mayapan was more properly applied to the city of that name, and the word Maya was given to all the territory ruled by the lords of Mayapan. However, it is clear that at the time of the arrival of the Spaniards, long after the downfall of the Cocom family, the name Maya was given only to the territory in the immediate vicinity of Mayapan in the northwest corner of the peninsula of Yucatan. It is thus shown on a map in the Islario of Alonso de Santa Cruz and on the Turin map of 1523.

Several other names have been applied to the whole peninsula. Both de Landa and Lizana say that it was called Uluumil cuz etel ceh, "the land of turkeys and deer," a term comparable to the biblical "land of milk and honey." We doubt if this phrase was ever commonly used, although Cochua, "broad bread" (i. e., "land of plenty"), is of a similar type and was in daily use at the time of the Conquest. The point, however, is not of great importance, for it is certain that Cogolludo's statement is true that many local names were applied to the country when Europeans first entered it. We shall therefore discuss the names found on various portions of the east coast.

Three general names were given to the southern part of the east coast: Chetumal, Guaymil, and Bachalal. Chetumal, or Chectumal, according to Oviedo,[2] was a town 2 leagues from the sea and "almost surrounded by water, for the sea is on one side and the lagoon on the other." This description enables us to locate the town on the strip of land between Bacalar Lagoon and Chetumal Bay. The "province of Chetumal" included this piece of land and probably also the shores of the bay and part of northern British Honduras. Of other towns in this region we may name Bachalal, on the shores of the lagoon; Chamlacao, on an island in the

[1] Vol. I, p. 100. [2] Lib. XXXII, cap. VI.

lagoon; Chequitaquil, where Alonso Davila defeated the natives; and Xamanzana, where Aguilar was made captive in 1511.

The province of Guaymil lay north and west of Bacalar Lagoon, on which it touched. According to Oviedo and Alonso Davila, the principal towns were Chable, 9 leagues from the lagoon; Maçanaho, 2 leagues from the lagoon; Yunpeten and Imipete. Although all of these appear to have been settlements of considerable size, we can not to-day locate any of them.

Bachalal[1] was a town on the western side of the lagoon, the inhabitants of which subsisted by acting as ferrymen for their neighbors. We have already seen that Bachalal or Ziyan caan was the first region in Yucatan to be settled by the Maya. I can find no evidence that the word was applied to more than the town at the time of the Conquest. After the Spaniards had settled in the region, however, they gave the name to all southeastern Yucatan in the corrupted form of Bacalar, and the names Chetumal and Guaymil soon dropped out of use.

The next province to the north of Guaymil was Cochua. The southernmost town was Tabi, and other settlements were Chikincenote, Ixmul, Kanpocolche, Tulma, Hoya, Tihosuco, and Zama. Many of these places existed until the War of the Castes, in the nineteenth century; so we can lay down the borders of the province with more certainty than usual. Tihosuco has bequeathed us a book of Chilam Balam which is now lost. Zama can be identified with some certainty as the ancient name of Tulum. Xelha or Xala must be near the northern boundary. Ascencion Bay, which was formerly called Zamabac, was in this province, but Espiritu Santo Bay may have been in Guaymil. In the *Relaciones*[2] it is stated that the native ruler at the time of the Conquest was Nacahun Cochua, who dwelt in Tihosuco. Sanchez de Aguilar,[3] however, says that the Cochua family lived in Ychomul (Ichmul). Another statement in the *Relaciones* is to the effect that Naobon Capul ruled the province of Cochua. This we doubt, however, for the Capul family are known to have governed the territory around the present Valladolid, the ancient Zotuta. To-day the first captain of General Mai, the chief of the Chan Santa Cruz Indians, who now dominate the east coast, is Desiderio Cochua. This man is the logical successor to General Mai, so that it seems possible that the Cochua family will again hold sway over the province of that name, for the present independent territory closely approximates the boundaries of the ancient province.

On the coast north of Cochua lay the province of Ekab, called Belma by Oviedo. Its capital was Mochi, but the most important town seems to have been Pole, which was the port of embarkation for the island of Cozumel and through which throngs of pilgrims passed annually. The province extended to the northward certainly as far as Mugeres Island and probably to Cape Catoche. The ruined cities which we shall describe all lay in either Cochua or Ekab.

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[1] The name is derived from *bac*, "around," and *halal*," reed," *i. e.*, "place surrounded by reeds," a direct translation of the Nahuatl *Tula* or *Tollan*, the legendary home of most the tribes of Anahuac. Considerable confusion is caused by the Spanish corruption of the word to Bacalal and Bacalar. The latter we have used to designate the lagoon as it exists to-day and have used the correct spelling, Bachalal, in referring to the aboriginal town or province.

[2] *Relaciones de Yucatan*, vol. II, p. 96.

[3] 1900, p. 95.

West of Ekab were the provinces of Conil, Choaca, and Zotuta. Conil embraced the coast just west of Cape Catoche. Choaca occupied the salt lagoons and the land just south of them. Zotuta was the territory around the present town of Valladolid.

FIG. 2.—Map of eastern Yucatan, showing ancient cities and provinces.

Of Yucatan in general, de Landa[1] writes: "Before the Spaniards gained this land the natives lived together in towns in great good order, and they kept the land clean and free from evil plants, and they set out very fine trees." Of the provinces of Cochua and Chetumal the same author says that in his time they had been completely desolated, as indeed they remain to this day, save for the descendants of the few who were resolute enough to flee the Spanish yoke.

[1] 1864, p. 90.

THE DISCOVERY OF YUCATAN.

On July 30, 1502, Christopher Columbus, then on his fourth and last voyage, sighted the island of Guanaja off the north coast of Honduras. Putting in here, he found a large canoe, 8 feet wide and of great length, made from a single log. In it, beneath a canopy, sat a wealthy merchant, who, with a crew of twenty-five men, had come to sell his wares. The clothes, the weapons, the utensils, of these people were such as the Spaniards had not yet seen in the New World. This canoe, in the opinion of most historians, came from Yucatan, and the statement is commonly made that Columbus should have gone there after learning about that land from the occupants of the canoe. I can find only one direct statement in an early account that this canoe came from Yucatan. It is contained in a letter written by Bartholomew Columbus in 1505 and now preserved in the Magliabecchi Library of Florence. In this manuscript it is stated that the canoe came from "a certain province called Maiam or Yucatan."[1] Brinton (1882), however, says (*fide* Berendt) that the words "or Yucatan" are later additions and are not part of the original text. As the north coast of Honduras, less than 30 miles from Guanaja, was called "Maia," there is no necessity at all of connecting the canoe with Yucatan.

De Solis and Pinzon, who in the year 1508 sailed to "those lands called Chabaca and Pintigron," have been credited with the discovery of Yucatan. The actual course, indeed even the date, of this voyage has been in dispute for centuries. Harrisse,[2] however, has assembled rather overwhelming proof that the voyage took place in 1508 and that these famous pilots went east and south from the bay of Honduras and not westward towards Yucatan.

In 1511 the contador Valdivia, in a ship from Darien sent by Vasco Nuñez de Balboa, was wrecked on the shoals of Las Vivoras near Jamaica. The crew and passengers escaped in a small boat and drifted for two weeks before they reached land. Where they actually reached the shore is a point on which the sixteenth-century writers do not agree. At all events, they were immediately captured and four men were sacrificed and eaten. The remainder were imprisoned but managed to escape, and after journeying for some distance they were recaptured and made slaves. All historians place the scene of the second captivity at Chetumal and at Xamanzana, 5 leagues away, except Sanchez de Aguilar, who says that they fell into the hands of Kinich, lord of Zama, which we believe to have been the city now known as Tulum. The harsh labors which the unfortunate captives were forced to perform in the next few years resulted in the death of all except two, one of whom, Geronimo de Aguilar, was ransomed by Cortes. The companions of Valdivia were the first Europeans definitely known to have come in contact with the Maya.

In the year 1517 Francisco Hernandez de Cordoba left Cuba with three or four ships to search for slaves. After several days at sea, during which bad weather was encountered, he reached the east coast of Yucatan. The place of his landfall is in dispute, and historians are divided in opinion between (1) Cape Catoche

[1] "Una cierta provintia chamata maiam vel iucatam." Informatione di Bartolomeo Colombo della Navicatione di Poniente et Garbin de Beragua nel Mondo Novo. In Henry Harrisse, Biblioteca Americana Vetustissima. Appendix, p. 473.

[2] The discovery of North America. London, 1892, pp. 453–465.

(Great Cairo) and (2) Punta de Mugeres on Mugeres Island. Bernal Diaz,[1] an eye witness, says that the landing took place near Cape Catoche, when "from the ships could be seen a large town standing back from the coast about 2 leagues. . . . . We named it the Great Cairo." He also describes how the Spaniards landed and fought with the natives. Nearby was "a small plaza with three houses built of masonry which served as cües and oratories. These houses contained many pottery idols, some with faces of demons and others with women's faces." According to Bernal Diaz, the punta de Mugeres was not visited until 1519, when Cortes touched there. His text states that there were "farms and maize plantations, and some places where the Indians made salt, and there were four cües, which are the houses of their idols, and there were many idols in them, nearly all of them with figures of tall women, so that we called the place the Punta de Mugeres."[2] Both these accounts record the presence of female idols, and Mugeres Island doubtless received its name for this reason. The exact landing-point is not of great importance to us, and the reader desiring further information is referred to a recent paper by Professor M. H. Saville (1918).

Hernandez de Cordoba, after making his discovery, sailed northward, doubled Cape Catoche, and skirted the north coast of Yucatan past the provinces of Conil and Maya to Campeachy and then Champoton. At the latter place his force was badly defeated by the natives, who are said to have been organized by Gonzalo Guerrero, one of the surviving companions of Valdivia, who had thrown in his lot with the aborigines and had risen to the rank of war chief. The Spaniards were thus forced to put back to Cuba, where, two weeks later, Hernandez de Cordoba died of the twelve wounds he had received in his encounter with the Indians.

The report of riches brought back by the survivors of this expedition aroused the avarice of the governor of Cuba, Diego Velasquez, a man whose ill fortune it was to despatch the troops who were to win untold wealth on the mainland for themselves and Spain, but who himself failed to reap the golden rewards, for he lacked sufficient character to control the adventurers who thronged his jurisdiction at that time. Velasquez now organized another expedition to follow up the discoveries of Hernandez de Cordoba. The command was entrusted to the governor's nephew, Juan de Grijalva.

Grijalva, in command of four ships, set sail from Santiago de Cuba on April 8, 1518, and reached the island of Cozumel on May 3. His ships passed around the island and anchored inside the southern point in sight of a tall tower.

Several descriptions of the island at this time have come down to us. Bernal Diaz[3] writes that there were three large towns, that Grijalva landed at the largest, and that one of the others was at the north end of the island. Juan Diaz, the chaplain of Grijalva, has written a description which we must quote at some length. Of the temple where Grijalva claimed possession of the land he writes:

"One ascended this tower by eighteen steps; the base was very massive; it was 180 feet in circumference. On top there was a little tower as high as two men; within were figures, bones, and cenise[4] of idols which they worshipped."

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[1] Vol. 1, pp. 14–17. [2] *Op. cit.* p. 104. [3] Vol. 1, p. 41.

[4] This may be a corruption of the Tainan word *Zemi*, here used in the sense of "images."

Of the town, Juan Diaz says:

"This village or town was well paved with concave stones; the roads, raised on the sides, incline towards the centre, which is paved with large stones. The sides were occupied by the houses of the inhabitants. They were constructed of stone from the foundation to half the height of the wall and were covered with straw. To judge by the edifices and houses, these Indians appear very ingenious; and if one had not seen several recent constructions, one would have thought these buildings were the work of the Spaniards."

"Walking for three or four miles into the interior," says Juan Diaz, "we saw edifices and habitations separated one from another and very well constructed."

On May 7 Grijalva sailed over to the coast of Yucatan, where he passed—

"three large towns separated from each other by about 2 miles. There were many houses of stone, very tall towers, and buildings covered with straw. . . . . We followed the shore day and night, and the next day towards sunset we perceived a city or town so large, that Seville would not have seemed more considerable nor better; one saw there a very large tower; on the shore was a great throng of Indians, who bore two standards which they raised and lowered to signal us to approach them; the commander did not

FIG. 3.—Tulum from the sea.

wish it. The same day we came to a beach near which was the highest tower we had seen and one discerned a very considerable town; the country was watered by many rivers; we discovered a bay.so large that a fleet might enter. It was lined with wooden buildings set up by fishermen."

The identification of the five cities passed by Grijalva is not certain, but the bay was undoubtedly Ascencion Bay and in all probability the large city as big as Seville was none other than Tulum.

Grijalva now turned back, doubled Cape Catoche, and sailed away along the shores of the Gulf of Mexico. We shall not follow his fortunes in detail. Suffice it to say that he returned to Cuba after sailing as far northward, say some, as the Rio Panuco, and that he brought tidings of the great wealth of Anahuac. Upon his arrival he found the governor, Diego Velasquez, had lost confidence in him and had sent Cristobal de Olid in a small ship to find out what he was doing. Olid had reached Cozumel and had followed the coast westward for some distance. Grijalva's conduct was strongly criticised by his captains, and the governor determined to depose him from his command.

The man chosen to lead an expedition to obtain the wealth seen by Grijalva was Hernan Cortes, the future conqueror of Mexico. Cortes's fleet sailed on February 18, 1519. It was dispersed by a storm, but was reunited behind the north end of Cozumel Island. Here Cortes caused the idols in a native temple to be cast down and set up a cross and an image of the Virgin in their stead. Here also he ransomed the unfortunate Aguilar, whose misfortunes on sea and on land have already been described. So much accomplished, Cortes set sail, but was forced to put in at the Punta de Mugeres to search for a ship lost in a storm. He then proceeded on his way to Mexico.

From this time forward Cozumel appears to have been a regular port of call for ships sailing between Mexico and Cuba. The mainland was avoided by the Spaniards, however, for there nothing was to be gained in the way of treasure and only hard blows awaited those who landed. This state of affairs endured for nine years.

THE CONQUEST OF YUCATAN.

The records of the conquest of Yucatan kept by the Spaniards are meager and unsatisfactory, and information relating to the east coast is exceedingly scarce. The reasons for this are several. In the first place, there were not many survivors left to write about some events. Also, no priests accompanied the earlier expeditions, and this class of men created much of the literature of the period. Finally, the cruelty and wholesale extermination practiced on the east coast and the extensive traffic in slaves were subjects to be consigned to oblivion rather than set forth in writing.

The fullest account of the expeditions of Montejo and of Davila on the east coast is found in Oviedo,[1] who obtained his information from a member of both campaigns, Alonso de Luxan, "a man of reputation and good memory." Alonso Davila has also left an account of his efforts to form a settlement near Chetumal. The conquest of that region is described by Lorenzo de Bienvenida, who first preached Christianity there. Further information is contained in the *Relaciones de Yucatan*, and certain details of interest are to be found in a record written by the native chief, Nakuk Pech, and known as the Chronicle of Chicxulub. Of prime importance also are the works of de Landa and Cogolludo. The former has few historical data, but is rich in detail concerning the habits and customs of the Maya. Cogolludo, however, records many historical events not to be found elsewhere. Unfortunately, Cogolludo lived so long after the Conquest that information obtained from eye witnesses was precluded. Indeed, the very date of Montejo's sailing for Yucatan had been forgotten.

Modern historical works on Yucatan are largely based on the sources indicated above. Among these Fancourt's "History of Yucatan" and Bancroft's "History of Mexico" are accessible to English readers. There are also several important histories in Spanish, among which we should mention the works of Carillo y Ancona, Molina y Solis, and Elegio Ancona.

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[1] Lib. xxxii.

Francisco de Montejo, the conqueror of Yucatan, was born in Salamanca. In the year 1514 he came to Panama in company with Pedrarias Davila. As that country appeared to offer little chance for advancement, he crossed to Cuba, where he took service under Diego Velasquez. He accompanied Grijalva in 1518, and in 1519 he became one of the captains of Cortes. He was chosen by Cortes to carry the first treasure obtained in Mexico to the court of Spain. Returning after the Conquest, he received a generous grant of Indians. In 1526 he again went to Spain, but his restless spirit forbade his settling there.

On the 8th of December, 1526, Montejo signed a contract by which he undertook to conquer Yucatan, for which he received the title of Adelantado on February 15, 1527. Some time then elasped, during which he recruited a following. He finally sailed with a number of men, given variously as 380, 400, and 500 (the first being the correct number probably), in two (some say three) ships, from San Lucar de Barramedo in May 1528. He touched at the city of Santo Domingo, where he acquired 53 horses, and finally reached Cozumel toward the end of September.

According to Oviedo, he passed only four days at Cozumel and then proceeded to the mainland, where he founded a town, at the distance of half a league from Xala (Xelha), which he called Salamanca.[1] The site chosen was swampy and unhealthy and more than 40 men soon died; so, leaving behind some 40 others, who were sick, the Adelantado pushed northward for 15 leagues to a town called Pole, where about half of his company died. Leaving behind 20 sick men, Montejo came to the coast opposite Cozumel with only 90 men fit for work. At this point fortune favored him, for he encountered Unopate (Ah Naum Pat), a cacique from Cozumel, who was proceeding with 400 men to the marriage of his sister with a mainland chief. Unopate directed them to Mochi, the head of the province of Belma, a town of 100 houses and many cües. There they were well fed and passed two months recuperating, and they were given two medals of gold, which the natives called alquin.

At length, leaving Mochi, they marched northward, passing through towns of 1,000 or 1,500 houses, until they came to Conil, a town of 5,000 houses, where they were well received and passed two months. Three leagues from Conil they reached Cachi, where they found a great square with a wooden column in it, where justice was administered, and also a great market filled with merchandise and eatables. Two leagues beyond lay Çinçimato, much of the way thither passing through incense trees, the products from which served the whole province. The next day at noon, after traveling 2 or 3 leagues, they came to the outskirts of the great city of Choaca, the center of which they did not reach until the hour of vespers. That night the inhabitants abandoned the town, but the next morning the Spaniards were attacked with great vigor amid the noise of drums and conch-shells and great clamor. However, the Spaniards in dead silence got to horse and put the Indians

[1] According to Blas Gonzales (*Relaciones de Yuc*, II, p. 111), Montejo landed at Soliman, which is now the name of a point between Tulum and Xelha. The priests who had accompanied the expedition were sent on to Mexico to give notice of the landing. For two months Montejo made no move and fifty soldiers died. Soliman (which name might be a native corruption of Salamanca) was half a league from Xelha and a league from Zama.

to flight with the loss of 10 or 12 of their own men and many Indians, including 10 chiefs. The next day the defeated natives sued for peace, and two days later the Spaniards passed to another large city called Aku (Ake), which was abandoned upon their approach. The next day they were again attacked, and they defeated the Indians without losing a man, although some were wounded. Obtaining bearers from the conquered inhabitants of Aku, they marched 4 leagues to Çiçia, the largest city yet encountered. Four leagues farther lay Loche, an even greater place. The chief of Loche received Montejo behind a thin curtain, that he might not be contaminated by the presence of a foreigner, and only designed to speak a few words, which were then expanded by his attendants. From this town the Spaniards returned to Salamanca, where they found a few surviving among those left behind, so that the whole force was now reduced to but little more than 80 men.

At this juncture a caravel bearing supplies arrived from Santo Domingo. In it Montejo set sail southward. Alonso de Luxan was placed in charge of a few men at Salamanca, who were to build another small vessel and then follow Montejo. The remaining men, about 40 in number, were given to Alonso Davila with instructions to follow Montejo by land along the coast.

Montejo sailed southward for 80 leagues until he reached the town of Chetumal, which stood near the shores of the bay which to-day bears this name. Landing at night, he was able to take four prisoners, from whom he learned of the presence among the Indians of a Spaniard named Gonzalo.

This strange character, known variously as Gonzalo Guerrero, Gonzalo Marinero, etc., had been one of the companions of the ill-fated Valdivia, an emissary of Vasco Nuñez de Balboa, who had been shipwrecked near Jamaica in the year 1511. After drifting for two weeks in an open boat the survivors landed in a province called Maia,[1] where several were sacrificed and eaten. The rest escaped and were recaptured near Chetumal, where they became slaves. Rumors of the existence of Spaniards in the interior had reached the ears of Hernandez de Cordoba in 1517, and, spurred by this, Cortes discovered the whereabouts of two survivors of Valdivia's party, one being Aguilar, who was ransomed, and the other Gonzalo. The latter had risen to rank through his prowess in war, had been tattooed, had pierced his ears and lips, and had married "a prime lady of that land," by whom he had three children. In short, he had thrown in his lot with the aborigines, and he refused the ransom offered by Cortes—wisely, as it turned out, for the Spaniards later learned that he had organized the attack on Hernandez de Cordoba at Champoton. After many years of oblivion, Gonzalo again appears in history through the pen of Oviedo.

When Montejo learned of the presence of Gonzalo at Chetumal, he saw the possibility of acquiring a useful ally—a man whose knowledge fitted him for a part such as that played by the famous doña Marina in the conquest of Mexico. Hence he sent Gonzalo a letter in which he promised him all manner of good things

[1] The fullest account of this tale is given by Gomara, who is followed by most subsequent historians. A different version is found in Bernal Diaz's "True history."

if he would side with the Spaniards. Gonzalo craftily answered that he was only an insignificant Indian slave, but that he would do what he could. This consisted in erecting fortifications to oppose the Spaniards. Gonzalo also sent a message to Alonso Davila that Montejo was dead, and he caused Montejo to be informed that Davila was dead.

Thoroughly discouraged by this news, Montejo left Chetumal and followed the coast southward as far as the Ulua River, whence he returned to Cozumel. There in mutual surprise Montejo and Davila met. The latter had turned back on his march along the coast on hearing of the supposed death of his leader and had returned to Salamanca. Later he had moved up the coast and had settled at Çamanca, the place where Montejo had met the chief Naum Pat, as described above. Thence he journeyed to Cozumel for a few days, where he encountered his leader, Montejo.

Montejo now departed for Mexico to obtain help from Cortes, and he does not again figure directly in the history of the east coast. He left Alonso Davila as his lieutenant, whose fortunes or rather misfortunes we shall follow. Davila was soon summoned by his chief to aid in the conquest of Tabasco. After the series of events which culminated in the capture of what is now the town of Campeachy, he set out with 75 men and 15 horses to capture Chetumal and to search for gold in that region. From Campeachy, according to Oviedo, Davila's route lay for 30 leagues through the province of Tutuxio (Tutul Xiu). He then entered a province about 40 leagues wide, known as Cochua or Cochuaque, where he stopped for a while at the town of Tulmo or Tulma, which was situated near some lakes. He then advanced to Chable, in the province of Guaymil, 9 leagues north of Bacalar Lagoon. Here Davila sent a summons to the chief of Chetumal, who refused to appear. Hence the Spaniards decided to attack the town of Chetumal, for which purpose they secured the aid of the chiefs of Maçanhao, Yunpeten, Chable, and other places in the province of Guaymil. The allies crossed the lake in canoes furnished by the Indians of Bachalal, but found Chetumal abandoned and all provisions removed. The town itself, consisting of 2,000 houses, was built on a peninsula and almost surrounded with water. In the neighborhood there were between 1,000 and 2,000 beehives filled with honey, and orchards of various kinds of fruits. In this land of plenty Alonso Davila founded the town of Ciudad or Villa Real.

The inhabitants of Chetumal had retreated northward for 3 leagues to Chequitaquil. Davila embarked a small force in boats and successfully carried out a surprise attack, which yielded captives[1] and a sum of gold given variously as 600 or 1,000 pesos, as well as emeralds, turquoises, and masks of gold. This was the first gold in any quantity obtained by the Spaniards. It was immediately sent to Montejo with a guard of six men, together with a request for reinforcements.

[1] These captives informed Davila that Gonzalo Guerrero was dead, whether in battle or of sickness it is not stated. Oviedo, lib. xxxii, cap. vi.

Two weeks later Davila went to Maçanhao, a town of 3,000 houses lying just north of the Bacalar Lagoon. To his surprise he found that the province of Guaymil had risen against him and that the roads were obstructed with barricades. However, his coming was unexpected and he entered the town in peace, admonished the inhabitants, and then pushed on 7 leagues to Chable. The inhabitants of this town had fled to Imipete, but after four days Davila induced them to return to their own dwellings. Here he learned that his messengers bearing the gold had been treacherously killed while eating at the town of Hoya, in the province of Cochua, some 13 leagues away.

Much perturbed by this news, Davila returned to Villa Real. The passing of three months without the return of his men proved conclusively that they must be dead. Native messengers were then despatched to Montejo from Bachalal, but again no answer came. Davila now decided that the road must be blocked in the province of Cochua and planned a campaign with the aid of the chiefs of Guaymil. Seven leagues beyond Chable they came upon the first town in the province of Cochua, which was defended by a dry stone wall (albarrada), behind which were many Indians. As the Spaniards started to attack, their native allies deserted, taking with them most of the baggage. The wall was carried, however, and there the Spaniards passed a miserable night, for the town had been burned and the inhabitants had filled up the only well, so that little water was to be had. The next day the Spaniards advanced 3 leagues to another wall, which they carried by assault. Here they rested for two days. Pressing forward again for 2 leagues, they reached a very strong barricade, defended by many people, which they could not carry. Retreat became imperative. Stealing away under cover of darkness by an unused trail, they succeeded in avoiding the barricades and reached the lagoon of Bacalar in safety after three arduous days. This defeat made it impossible to hold the country. Efforts to communicate with Montejo had failed. Consequently, Davila embarked the few survivors in canoes and set sail for the Spanish settlement at Trujillo in Honduras, where they arrived after a long and toilsome journey.

While the events just described were taking place, the fortunes of the Adelantado Montejo on the west coast of Yucatan had not prospered, and many of his men had deserted in order to go to Peru. With affairs at this low ebb, Montejo assigned to his son, also named Francisco, the powers granted to him by the King, with the result that the Conquest took on a new lease of life. After stern fighting, the Spaniards finally became masters of the western half of the peninsula. This phase of the Conquest terminated with the founding of the city of Merida on January 6, 1542.

On March 13, 1542, Francisco de Montejo empowered his nephew, who bore the same name, to undertake the conquest of the province of Conil and northeastern Yucatan. The details of this and subsequent expeditions are for the most part unrecorded. Montejo is said to have passed four months in Teco, the last town in the province of Merida, where many natives submitted to him voluntarily. He then went to Izconti in the province of Copules and then through the province

of Chiquinchel on the north coast. Finally he came to the town of Choaca, which stood on the north side of a small lake, 2 or 3 leagues from the sea,[1] 6 leagues from the port of El Cuyo,[2] 15 leagues from the Rio de Lagarto,[3] and about 8 leagues from Conil.[4] The Spaniards now founded the city of Valladolid on the opposite side of the lake from Choaca. In 1544, Valladolid was moved to the site of the ancient Zaqui or Zaquigual, where it now stands. The date of the original foundation was May 28, 1543.

Montejo waited in his new city for some time while the chiefs of the Tacees came in to submit. He then marched southward for 40 leagues to the province of Cochua, which he partly subdued. On his return to Valladolid the Indians were divided as property among their conquerors.

Leaving Francisco de Çieca in command, Montejo now set out for the east coast. Coming to Pole, he obtained a large fleet of canoes, in which he obstinately set sail for Cozumel in spite of bad weather. His vessels came to grief in mid-channel and he was forced to put back, with the loss of several men. The chiefs of Cozumel, however, crossed over to him and formally submitted to the King of Spain.[5] Montejo then returned and received the submission of the Copules.

The news of the disaster to the Spaniards off Cozumel, greatly exaggerated, had spread southward, and, as a result, the partly pacified province of Cochua now rose in revolt. Montejo sent Francisco de Çieca to suppress the uprising. His troops pushed southward to Tabi, the last town of the province. Complete pacification was now secured, which Gaspar de Pacheco had been unable to obtain. This man, in the year 1544, had been sent to subdue the southeastern part of Yucatan. He had gone only as far as Cochua, which he proceeded to plunder. He then returned with his booty and slaves after intrusting the command of the expedition to his nephew, Alonso Pacheco.[6] "Nero," writes Father Bienvenida, "was not more cruel than this man"—a verdict which is sustained by Diego de Landa, who was himself removed from Yucatan for his cruelty to the natives.

Alonso Pacheco now marched into the province of Chetumal. He seized all supplies of food, and the Indians took to the woods, where great numbers starved, so that towns which had contained 1,000 or 1,500 inhabited houses were reduced to 100. With his own hands Pacheco garroted or beat to death his unfortunate prisoners. He cut off the breasts of women and caused others to be thrown in the water with calabashes tied to their feet, so that they drowned. He cut off the hands and noses and ears of the men and committed other acts so atrocious that even the callous historians of his age shrank from putting them in writing. His conquest completed, Pacheco founded the towns of Salamanca de Bacalar in the year 1545.

In the year 1546 a widespread revolt occurred throughout the eastern provinces. A few Spaniards were cruelly put to death by the natives, of whom many suffered

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[1] *Relaciones* II, p. 8. [2] *Relaciones* II, p. 72. [3] Cogolludo I, p. 261. [4] Oviedo, lib. XXXII, cap. III.

[5] The unfortunate Cozumeleños had already submitted to Grijalva, Olid, Cortes, Montejo the elder, and probably to others whose names are not recorded.

[6] Cogolludo credits this conquest to Melchor, the son of Gaspar de Pacheco. We have followed the earlier authorities.

in reprisal. A large Indian force invested Valladolid, Spanish reinforcements arrived, and a bloody conflict ensued. The natives remained masters of the field, but could not keep their army together, so that the Spaniards were able to overcome isolated bands seriatim. The province of Chetumal had been aroused because the Spaniards had taken the wife of the chief of Chamlacao. This town covered a small island and was fortified on all sides. The Spaniards dared not attack; so the cacique's wife was restored to him and peace was concluded by negotiation.

The Conquest of Yucatan was now an accomplished fact. The natives, though, were to rise against the white man more than once, but in general the yoke was too secure to be thrown off. At this point the native civilization, already undermined by centuries of civil war and pestilence, began to yield before the insidious influence of the Spanish priests, who instilled in the minds of the rising generation the belief that the Conquest was achieved not only by force of arms but by the will of Heaven. For the greater convenience of the priests, the natives were forced to abandon their homes[1] and live beside the newly founded Christian churches, which resulted in the death of quite a large part of the population from famine, disease, and exposure. The non-clerical Spaniards also helped to depopulate the land, first by selling huge numbers of their captives as slaves—perhaps as many as half a million—and secondly by working them to death. The treatment of the Indians has remained brutal to this day under a system of peonage which is rigorously enforced. The condition of the natives is well expressed by the proverb that the Indian hears not through his ears but through his back.[2]

SUBSEQUENT HISTORY OF YUCATAN.

The succeeding history of the east coast of Yucatan until the nineteenth century is largely confined to piratical raids and to the logwood operations of the British. The pirates were of all nationalities—English, French, and Dutch especially. In 1571 the French raided Cozumel and were driven out by Gomez de Castillo, one of the original conquerors. In 1597 the English landed at Cape Catoche and burned the flourishing town of Chancenote. In 1598 the English established themselves for a short time on Cozumel, and they attacked this island again in 1600 and 1601. In 1613 pirates took temporary possession of Ascencion Bay. In 1642, Diego the Mulatto sacked Salamanca de Bacalar. This town suffered the same fate in 1648 and again in 1652 at the hands of the pirate Abraham. The details of these depredations do not concern us, but the results are important, for these raids caused the Spanish gradually to abandon their settlements on the east coast of Yucatan. The aboriginal population thus regained control of the region and has not relinquished it to this day.

As piracy died out, the former freebooters turned to the cutting of logwood and mahogany on the east coast of Central America. This trade, which was vigorously opposed by the Spaniards, began towards the close of the seventeenth

[1] This was accomplished by the simple expedient of burning the house, often without allowing an opportunity to remove the household effects or even the sick.

[2] "He maseule matan u yubic than tu xicin, uama tu pach." Registro Yucateco, vol. I, p. 171.

century. The center of operations was the territory which is now British Honduras. We shall not discuss the details of these operations, concerning which there is a large body of literature.

Of the Indians inhabiting the east coast of Yucatan there is but scant information from the time of the Conquest until the nineteenth century. In the year 1547 the chief Ek Box of Ekab attacked and captured a Spanish ship. This action led to a punitive expedition against the son of Ek Box, who had succeeded his father.[1] In 1592 and again in 1597 Juan de Contreras led expeditions to the island of Cuntó (Contoy?) to catch fugitives and idolaters.[2]

The anonymous chronicler of Alonso Ponce recorded in the year 1588 the following information regarding the Ascencion Bay region:[3]

"In this bay are many islands, and on some of them are idolatrous Indians; and they say that there are other apostates and renegades, and they even say that there are negroes from a ship from Guinea which was lost there. On the mainland near this bay and port there are some edifices of hewn stone of ancient times, and the Indians say that the temples were for the gods and idols of the lords of Chichenitza, and when they wished to go to Honduras for cacao and feathers and other things, they went and came by here to offer sacrifices, and here they embarked and disembarked. Near this same bay there is much land, mountainous and yet unconquered, and the Indians say an abundant stream flows through it and that on its banks in one place and another there are settled many people to be converted and conquered, and that they have many cacao plantations, and that they communicate with the Indians of the islands mentioned above."

On the 13th of January of the year 1595 the governor, Alonso Ordoñez de Nevares, commissioned Ambrosio de Arguelles to pacify the region of Ascencion Bay. No expedition was organized, however, and in the year 1601 a second agreement was signed which specified the division of such spoil and Indians as might be captured within a year. A frigate was then purchased and set sail from the Rio de Lagartos in Feb. 1602. After doubling Cape Catoche, Arguelles fell in with an English ship which lay aboard him. The Spaniards had no stomach for a fight and surrendered after one of their number had been killed. They were then set ashore and reached Merida on foot some three months later.

Cogolludo,[4] who relates the above episode, makes the observation that at the time of writing (1654) the Indians of Ascencion Bay were as yet unsubdued. This raises the question of whether the cities such as Chacmool, Tulum, and Tancah were still inhabited. The writer believes that the major cities had been captured and the populations scattered during the expedition of the Pachecos over a century earlier and that the population in Cogolludo's time was independent and unmolested, as are the present-day Indians, but that they had withdrawn from the large cities on the coast.

The succeeding history of the east coast of Yucatan is a monotonous list of uprisings, each of which was doubtless suppressed with many unrecorded acts of cruelty. One of the most important of these occurred in 1636, when the Indians

[1] Nakuk Pech, p. 231. The name Ek Box means "the black man." Its use may have been symbolical, but it suggests that an escaped negro slave had risen to power in this part of the country. The *Relacion* of Alonso Ponce records the wrecking of a slave ship on the east coast.

[2] Cogolludo, II, p. 83. [3] Vol. II, p. 408. [4] Vol. II, p. 123 *et seq.*

of Bacalar revolted. By 1639 the Spaniards held only the town of Salamanca and order was but partially restored in 1644.

The great revolt of 1847, the so-called War of the Castes, swept like a flame across the peninsula and, had the Indian generals been able to hold their army together when the planting season came, might have resulted in the expulsion of the white man. After five years of terror and bloodshed, peace was secured when the Mexican Government recognized as semi-independent the Indians of the eastern and southern portions of the peninsula. In 1860 the eastern Indians rose again because the Mexicans had failed to observe the treaty of peace. Chan Santa Cruz was captured by 3,000 whites, but was soon recaptured.

At the beginning of the twentieth century, the Mexican Government, jealous of the trade in chicle and precious woods built up by the Indians, started a war of extermination on the east coast of Yucatan. For this purpose the jails of Mexico were emptied and the men thus released, accompanied by low-class prostitutes, were sent to Yucatan, where most of them died of malaria or venereal disease. The war thus started was waged fiercely but intermittently by both sides. During its course the Great Wall at Tulum was occupied three times by the Mexicans, but they were unable to advance into the interior. Peace which recognized the independence of the Indians was made in the year 1913. Since that time the east coast has gradually become safe for foreigners, although the presence of Mexicans is still resented. Recently the Indians have granted several chicle concessions, one of which is in the Tulum district, with headquarters at the Tulum Playa.

THE MODERN INDIANS.

The Carnegie Institution expedition of 1922 came in contact with Indians from Tulum, Chun Pom, and Acomal. In regard to the customs and culture of these Indians we have no new information to present. Our other work left no time to spare for such investigations. The curious reader is referred to the works of Gann, Aldherre, and Sapper. When the Indians understood our purpose they placed no obstacles in our way and even consented to work for us. We found them persistent and cheerful, if not intelligent, workers. Two characteristics were particularly noticeable. In the first place, they are malarial and anemic and succumb very easily to attacks of fever induced by fatigue. Two men working for us died in this way. Secondly, they are very much dirtier in their personal habits than other Indians of the same race living in other regions. Whatever their faults, one can not but admire their unconquerable spirit and fierce love of the land. They are almost the only members of their race who have any spark of what might be called patriotism.[1] Their determination to maintain their independence remains undiminished after centuries of oppression and repeated attempts at extermination.

[1] Certain villages in the highlands of Guatemala, such as Naguala, Santo Tomas Chichicastenango, etc., not only have preserved the independent spirit of these east-coast natives, but have maintained a much higher plane of culture.

CHAPTER II.

THE ARCHITECTURE OF EASTERN YUCATAN.

Before proceeding to the discussion of the individual remains of buildings at Tulum and of other ruins on the east coast, it will be well to survey the general features of the architecture of this region and to examine its correspondence with Maya architecture elsewhere. At the outset of the discussion we should state that Tulum apparently is the center of a somewhat specialized form of Maya architecture which extended from Espiritu Santo Bay to Cape Catoche and an unknown distance into the interior.

Types of buildings.—Maya buildings in general are usually classified according to their supposed functions as "palaces" or "temples." Palaces are long multichambered edifices, such as the House of the Governor at Uxmal; temples are smaller buildings, often perched on the tops of truncated pyramids, such as the Castillo at Chichen Itza. As a matter of fact, we know very little about the uses to which the Maya put their buildings except from archæological observation, but the conventional nomenclature is probably correct, and it is followed in this report. Another type of edifice generally recognized is the "platform mound." This is a relatively low masonry substructure with no trace of a building on top, but which presumably once carried a house of perishable materials which has disappeared in the course of time. These three types are found on the east coast, as well as a special form of building which we shall call a "shrine."

The *temples* on the east coast are not set on high substructures as elsewhere in the Maya area. At Tulum their substructures are particularly low and are not terraced; but at Tancah and Xelha they are usually found on low-terraced pyramids with a rectangular cornice on each terrace. The temples themselves are small buildings of one or two rooms, with an altar against the back wall.

The form of building on the east coast which we call a *palace* is not the same as the palace of central Yucatan, where this word is applied to long, multichambered buildings with ground plans resembling nothing so much as the cells of a beehive. The east-coast palace consists fundamentally of two long rooms. The front room has a wide doorway with columns and may have a second row of columns down the main axis. The back room has a small shrine or sanctuary set against the back wall. The sanctuary is a small building in itself, with a roof of its own and complete in all details such as the moldings, door-panels, etc. This is a type of building which closely resembles the temples at Palenque. However, in most cases the fundamental plan has been changed by the addition of more rooms at one end of the structure, and the long chambers of the original edifice are often divided into two parts.

From the fact that the east-coast palace resembles the Palenque temple, it may be argued that it is not a palace but a temple. The size and position of these buildings, however, seem to indicate residential use. The addition of extra rooms

and the fact that no other structures exist suitable for residence also favor this theory. The presence of the sanctuary shows that even in his home the Maya noble was unable to escape the all-pervading influence of religion, which dominated the arts and crafts and daily life to a degree surpassed among no other people.

Platform mounds occur frequently on the east coast. They are all rectangular in outline and have vertical sides, but several specialized types may be recognized. In the first place, we find at many sites relatively high platform mounds placed directly in front of the chief temple. These mounds are always ascended by two stairways placed on the sides nearest and farthest from the temple. From their position and relatively great height we judge that they were used primarily for religious spectacles and did not have much, if anything, by way of construction on the summit. A second group is ascended by one stairway (or rarely two placed on the same side of the mound) and have either (1) nothing on top, (2) a small shrine set towards the rear, or (3) one or two small rectangular masses of stones about a foot high. In the case of the small stone-piles we sometimes find a wall 3 to 5 feet high running along one edge only. These mounds often contain vaulted tombs. The use of this type is perplexing, but the probability is that they supported wooden buildings, in which case the shrine must have been a sanctuary like those in the palaces, and the stones on top may have been altars or benches like those in the Castillo at Tulum. A third type of mound is very much smaller and merges with what we call "rectangular altars."

The *shrine* is a miniature square temple usually 4 or 5 feet in each dimension, with one, three, or four doors. They are found elsewhere in the Maya area, for instance at Copan, but are especially common on the east coast. At Tulum they are built on the ground, but at Tancah and Xelha they are placed on the tops of the tallest truncated pyramids, in positions which indicate an important place in the religious organization of the city. On Cozumel and at Xelha they were built against the base of large pyramids which have crumbled and lost their shape. In construction they duplicate the larger buildings. They have vaulted ceilings, an exterior molding, and even the typical sunken panel over the door.

It is difficult to draw a dividing-line between a small temple and a large shrine. For convenience in classification we have applied the name shrine to those edifices too small to admit the performance of a religious ceremony inside by even one person, while we have called temples the buildings large enough to accommodate not only an altar but its attendant. Shrines were probably used for burning incense—a practice to which the Maya in general were much given and which appears to have been particularly prevalent on the east coast.

Altars are found in many of the buildings and also by themselves in the open. The latter resemble small platform mounds, perhaps 4 feet square and a foot or two high, and they sometimes have a tiny stairway built against one side. It is quite possible that they were the foundations of shrines built of wood, but in either case they were doubtless used for burning offerings of copal and rubber.

Assemblage.—All Maya cities show an orderly grouping of buildings, which may roughly conform to the cardinal points, though by no means forming a calculated astronomical orientation. In the southern cities of the earlier epochs this

grouping consists of a central acropolis or series of acropoles surrounded by large plazas. In Yucatan, in later times, the acropolis is absent and the large cities consist of series of related structures such as the Monjas complex at Uxmal or the Group of the Columns at Chichen Itza. The small sites contain but one such complex, while the larger cities have several.

On the east coast this generalization holds true. Most of the sites, however, consist of but one or two groups of related structures gathered around a court. El Meco, the Cozumel ruins, Xelha, Tancah, and Chacmool may be thus described. Tulum is a series of complexes, in which several courts may be distinguished. A peculiar feature of this town is the presence of well-developed streets, one of which runs absolutely straight for a quarter of a mile through the center of the city, with edifices on either side. The orderly arrangement of Tulum is further emphasized by the surrounding stone wall.

Materials.—Yucatecan buildings are fabricated of the limestone which forms the backbone of the peninsula. This stone was burned to obtain lime, crushed to form rubble, and cut to make building-blocks; of it, the walls, floors, vaults, and all other parts of a house could be made. Nevertheless, this valuable material was not used to the exclusion of wood, and even in the most sumptuous temples and palaces we constantly find lintels and vault-beams of wood. On the east coast the roofs and ceilings were often formed of wood covered with rubble. The beams are sometimes made of the traditional *sapote* wood and sometimes of a wood designated by our workmen as *madre de cacao* and *cirocote*.

Substructures.—It may be laid down as a practically universal rule that no Maya building rests directly on the ground; all stand upon more or less elevated substructures, which vary with time, locality, and the nature of the building they support. In the Peten area the temples stand on bases which are not only high but very steep. Later in Yucatan the temple substructures are less elevated and not so steep as those of the Peten area. The palaces, because of their bulk, could not be raised off the ground as much as the temples.

On the east coast very high terraced pyramids are markedly absent. The highest measured substructure is at El Meco and is only 25 feet high—a very insignificant mass compared to the great pyramids at Tikal, Nakum, and elsewhere. More commonly the temple-bases are low and have no molding. Circular substructures were encountered at Tulum, Tancah, Mugeres, and Xelha. Circular buildings are found at Chichen Itza and Mayapan and are said to have been connected with the worship of Kukulkan, the god of the Air. Circular substructures may have supported temples similarly dedicated.

The palace substructures are invariably low—about 3 feet high—and have a heavy rectangular molding at the upper edge. The platform mounds are of a similar height, but usually without a molding. Shrines are built on a very low platform, with a few exceptions at Tancah and Xelha, where they are found on large, terraced pyramids.

An almost constant feature on the east coast is that buildings stand on a terrace about a foot high which runs around the outer wall in the form of a step or bench.

In some cases it is the only substructure of the edifice, but more often this low platform rests on the higher types of substructure just described. As an architectural feature this step or bench is extremely useful, serving to give added height and to break the harshness of juncture between the building proper and its base.

Finally, we must speak of rooms which have been filled with masonry to support later construction above them. This practice is not unusual in long-occupied Maya cities. We recall examples at Chichen Itza (Monjas and Akat'Cib), Sayil, and Santa Rosa Xlabpak. It resulted from the Maya distrust of directly superimposed rooms, coupled with a desire for high buildings. To secure the latter end without superposing rooms, the center of an old building was sometimes filled with rubble, on which base a second story or range was then erected. Examples of this construction are found at Tulum and El Meco.

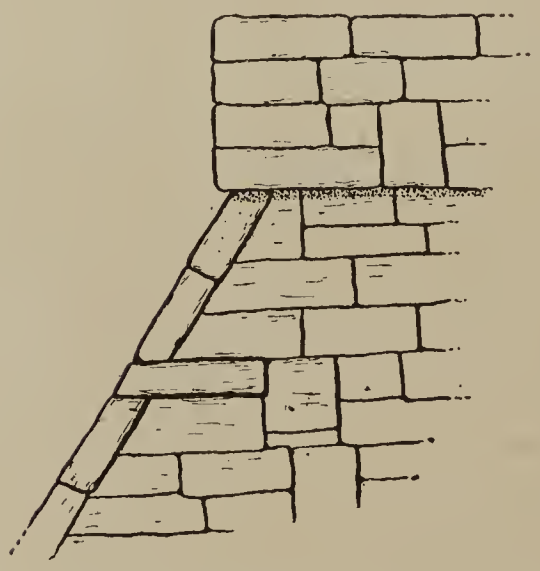


FIG. 4.—Construction of balustrade, Castillo, Tulum.

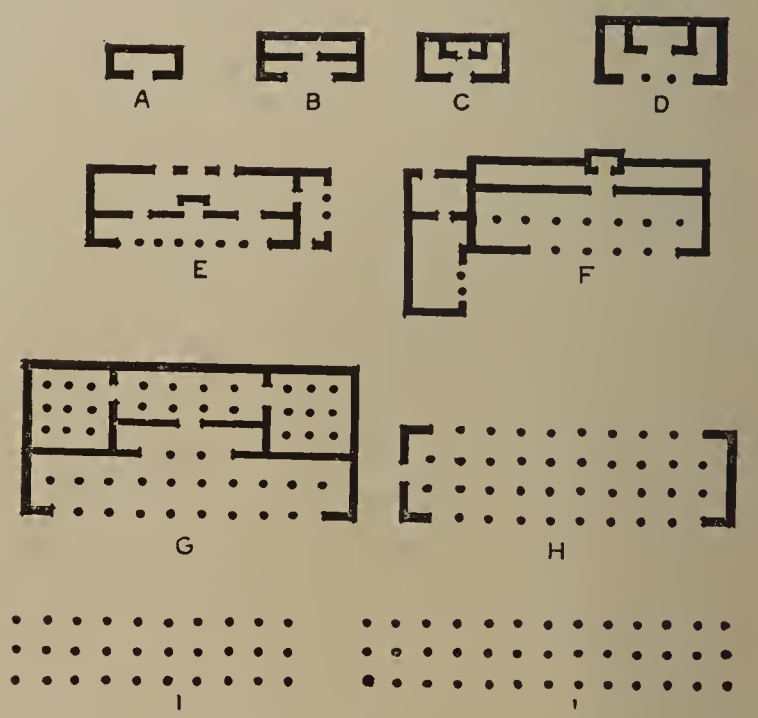


FIG. 5.—Ground-plans: A, B, E, F, Tulum; C, Playa Carmen; D, Tulum Playa; G, Chichen Itza; H, Chacmool; I, Cancuen; J, Ake.

Stairways.—As every Maya building was raised on a substructure, stairways were a necessary adjunct, the imposing effect of which was not lost on the native architect. Elsewhere in the Maya area there are examples of stairs over 100 feet high and 30 feet broad, with elaborately decorated balustrades. The largest examples within the area under discussion are found at Tulum and El Meco and are scarcely a quarter that height. The angle of ascent is normally 45 or 50 degrees, so that the rises and treads are of equal size. On the Great Wall at Tulum are stairways that branch in two directions (fig. 39). No interior stairs have yet been found on the east coast.

Stairways are commonly flanked by broad balustrades, which elsewhere are sometimes decorated, but on the east coast they are plain (fig. 4). To this statement an exception must be noted at El Meco, where Holmes saw an example of the so-called serpent balustrade—a feature found elsewhere only at Chichen Itza. This conception treats the balustrade itself as the body of a serpent, large realistic heads

of which are placed at the base on either side of the stairs. It is one of the many architectural forms introduced into Yucatan by Nahua invaders in the thirteenth century.

Ground-Plans.—Temple ground-plans (fig. 5, A and B) are exceedingly simple, for practically all consist of one rectangular chamber. More rarely two rectangular rooms occur. Shrines also have one small rectangular room entered by one, three, or four doors. Palace ground-plans, however, are complex, and these we must examine in detail.

The theoretical evolution of the palace type is seen in figure 5. The simplest form (C, D) consists of a single room and a sanctuary. The fully developed palace (E) has an entrance supported by columns, two long, narrow rooms, and a sanctuary in the back room. The front room may have a series of columns down the center (F). From this form of structure are derived such edifices as make up the Group of the Columns at Chichen Itza and the great mound at Ake. Figure 5, G, is a building from the Group of the Columns at Chichen Itza, in which the front room is scarcely more than a portico, while columns are used in the back rooms. In H the side walls have almost disappeared, and in I and J they are totally absent.

To develop this form of structure the Maya found it necessary to abandon the customary vaulted ceiling, for the weight was too great to be carried entirely by columns. Perhaps we should say that having substituted flat ceilings supported by beams and having freed themselves from the restriction imposed by the vault, this form of structure was a logical development. On the east coast these buildings with columns have beam-and-rubble ceilings, but the lack of débris at interior cities, such as Chichen Itza and Ake, suggests that thatch was used for roofing.

Second Stories.—The Maya rarely placed one room directly over another, for they apparently lacked confidence in the overstepping vault to carry the resulting load. Examples of this construction exist, however, of which the best known are the tower at Palenque and the Temple of the Five Stories at Tikal. On the east coast we encountered such edifices at Cacakal (fig. 171), Tancah (fig. 125), and Tulum (plate 20, B). In all of these there are directly superposed rooms. In each case the upper story is probably a later construction than the lower.

Walls.—It must be remembered that true masonry scarcely exists in Yucatan. The usual construction is monolithic in character: a rubble core consisting of irregular stones grouted with mortar, on the exterior of which is a veneer of cut stone. The stone blocks are cut rectangular (in the better class of construction) on the outer face and are set in the rubble by a projecting tenon. If the stone is regarded only as a veneer and is without structural value, it follows that there is no need for breaking joints, indeed no need for courses or any of the devices of masonry.

On the east coast the walls are from 1 to 4 feet thick, 2 feet being perhaps an average figure. This is rather thin as Maya walls go and is not thick enough to allow the entire weight of the building to be supported by the rubble core. Consequently, the stonework assumes the character of true masonry in many instances, and it must be admitted very bad masonry, for the stones are not neatly trimmed

nor are joints broken. In the days when these cities flourished, this was not apparent to the eye, for all walls were covered with a smooth coat of stucco; but to-day it is sadly obvious, for the stucco has peeled off for the most part, revealing the crudeness of the stonework, and the walls themselves are often badly cracked.

A feature particularly developed at Tulum is the outward slope of the exterior walls from bottom to top (plate 18). Its occurrence is too frequent and too pronounced to be merely accidental. As a matter of fact, this batter is an element of strength, for the outward slope of the exterior wall tends to balance the interior projection which forms one side of the vault, thus introducing the principle of the cantilever. This principle is also found in the case of an interior wall supporting half vaults of the rooms on either side (*e. g.*, the interior wall of the third range of the Castillo at Tulum). Its true nature, however, can scarcely have been apprehended by the Maya architect.

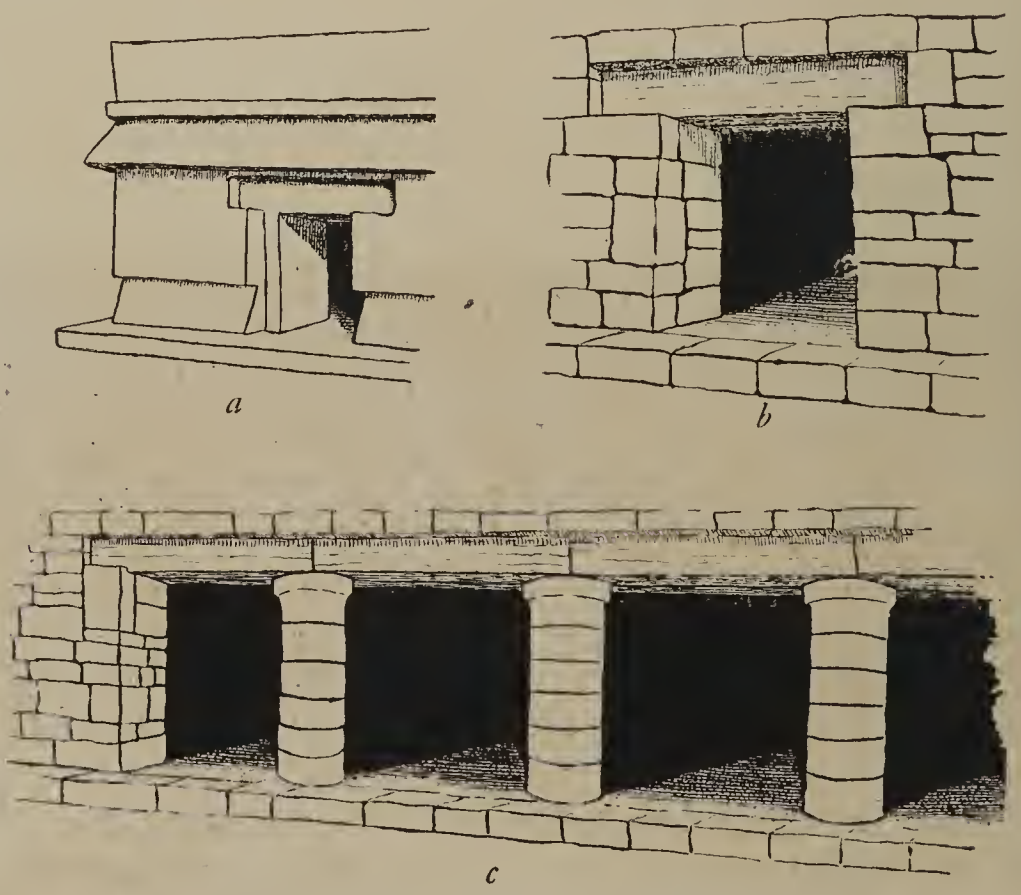


Fig. 6.—Types of doorways, east coast of Yucatan.

Floors.—Floors were made of polished cement. In one case at Tulum (structure 16) the floor was painted red. This may have been a universal custom, but to-day the floors are usually too weathered to tell.

Doors and Windows.—The doorways on the east coast are distinguished by the fact that the lintel is set back 3 or 4 inches from the face of the exterior wall, thus forming a sunken panel, usually about a foot wide, which runs across the top of the door and projects for a foot or more on either side. This sunken panel may rest against the lower molding or may be dropped a few inches below it. In a few instances the lintel and the door-jambs are set back from the outer wall, so that a recessed panel runs around three sides of the door (fig. 6, *a*). With the excep-

tion of the Temple of the Tigers at Chichen Itza the recessed panel over the door is not found in Maya architecture outside of the east coast. It is found, however, at the ruins of Mitla in the Mexican State of Oaxaca. The lintel is either of stone or wood and sometimes is formed of a combination of stone and wooden beams. The doors themselves are rectangular openings and may be either single or multiple. The single doorway is found in the smaller buildings, usually those classified as temples. A typical example is seen on figure 6, *b*. Multiple doorways are divided either by the rectangular masonry piers or more often by round columns. When columns are employed they usually support wooden lintels and they are associated with the flat ceiling and the palace type of edifice. The number of columns is either two or a multiple of two. The largest number of columns observed in a single entrance is eight (Chacmool).

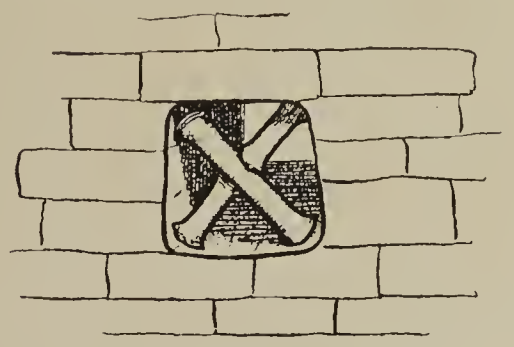


FIG. 7.—Latticed window, structure 21, Tulum.

A peculiar feature of the east coast doorways is that when the walls have an outward batter the door may slope inward towards the top at a corresponding angle. This characteristic is admirably brought out by the Temple of the Diving God at Tulum (fig. 56).

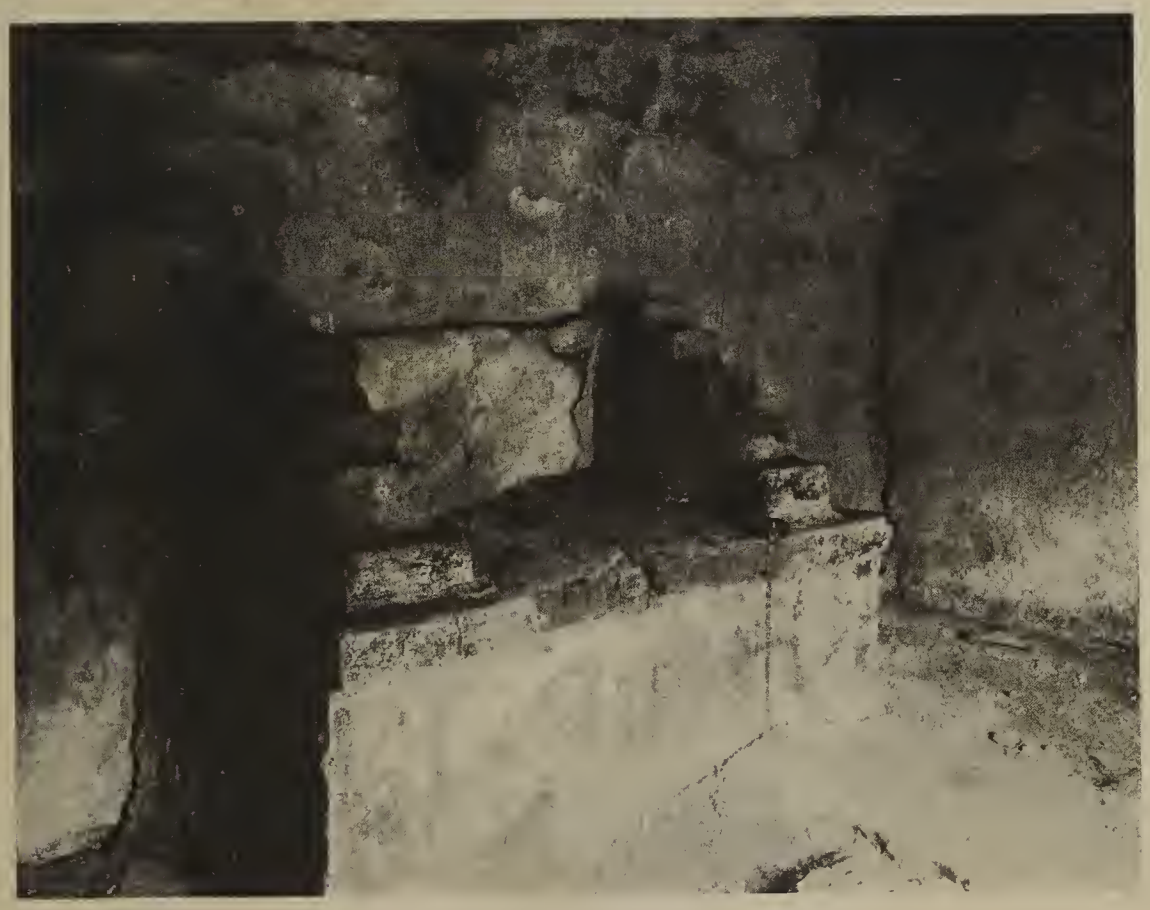


FIG. 8.—Altar of structure 1, Xelha.

At the interior corner of the doorways there sometimes are stone rings or pegs. These are found elsewhere in the Maya area and are believed to have supported curtains, for no signs of an actual door have yet been found.

There are windows in almost every building. They are small rectangular openings, usually about 6 inches square. The windows on the east wall of the upper range of the Castillo at Tulum are splayed on the under side, so that the tradewind forces a constant current of air through the building. The only attempt at embellishment of windows we observed was in structure 21 at Tulum (fig. 7), where openings about a foot square had small cross-bars inserted.

Altars and Benches.—Altars are found in most of the east-coast buildings of the classes designated as temples and shrines. They are usually 1 foot high and from 2 to 4 feet in length and breadth. In the temples they are placed against the back wall and in the shrines either in the center of the floor or against the back wall. An unusually elaborate altar with terraced wings is shown in figure 8. There is a large hole in the upper surface which goes down to the level of the floor.

FIG. 9.—Door-columns, structure 21, Tulum.

In it were found corn-cobs and other vegetable remains; so it may have been a receptacle for offerings or it may have held the base of an idol. In some instances altars were replaced by low benches running across the ends or the back of the room. In room *b* of the Castillo at Tulum there are benches on three sides.

It has been a matter of current belief that the present-day Indians employed the altars of ancient edifices for religious practices handed down from their ancestors. This is in a measure true, for we observed some 20 or 30 Chum Pom Indians praying and burning candles before the miniature cross seen in figure 10. This had been placed on the bench in room *b* of the Castillo between 1918 and 1922.

Columns.—Maya architects did not employ the column until long after their race had settled in Yucatan. In the great cities of the south, columns are totally absent. In the few cities where multiple doorways occur, such as Yaxchilan and Palenque, these doors are separated by masonry piers. In fact, columns are a

common feature only at Chichen Itza (where they are associated with edifices assigned to the Nahua period) and in the ruins on the east coast of Yucatan. At some other Yucatec cities round columns were sparingly employed, and probably represent construction of the final phase corresponding to the Nahua period at Chichen Itza. The list of such sites runs: Ake, Chacmultun, Chichen Itza, Dsehkabtun, Kabah, Labna, Mayapan, Sayil, Xcalumkin, and Xcanalchen—only ten ruins out of the many that are known. In contrast with the rest of Yucatan, columns are found at practically every site on the east coast.

The normal east-coast exterior column is round with a square capital. In some cases it is monolithic, but more commonly it is made up of five or six drums. The surface was covered with plaster, so that the two types were indistinguishable. The capitals are usually square, but may be round. An unusual case in which the capital is decorated is seen in figure 9.

FIG. 10.—Modern altar furnishings, Castillo, Tulum.

a, head and neck of serpent.
b, body of serpent.
c, false capital, of plaster.
d, lintel.
e, sunken panel.
f, *f*, tail of serpent.
g, vertical niche over doorway.
h, *h*, front line of façade.
i, stone ring.

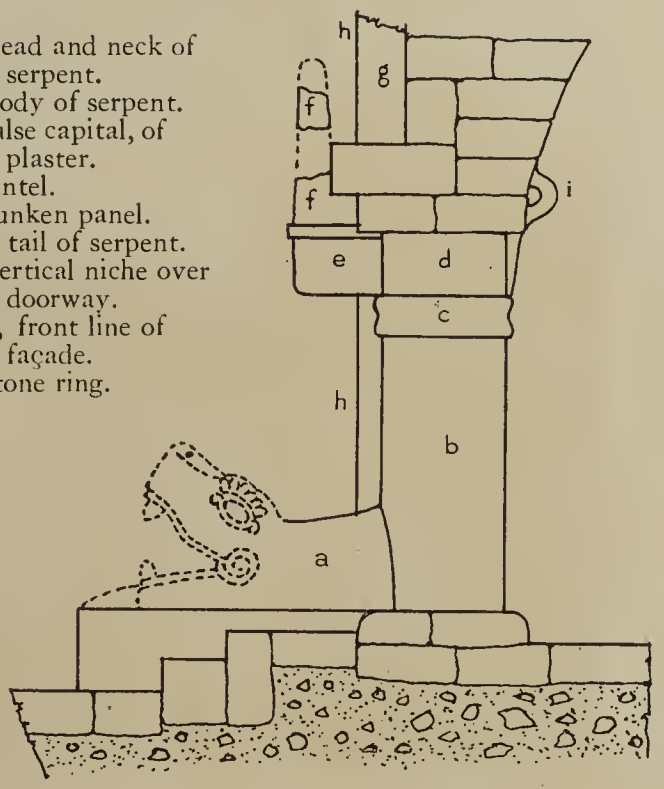


FIG. 11.—Serpent-column, Castillo, Tulum.

A second type of exterior column is that known as the serpent-column. This has elsewhere been reported only at Chichen Itza, but is found at Tulum and El Meco on the east coast. The form has been very definitely associated with the period of Nahua influence. The column itself in this conception is regarded as the body of a rattlesnake. At the base there is a large head which projects forward. At the top is a cornice above which rises the tail with conventionalized markings which represent the rattles. The example from Tulum figured here is very much simpler than that at Chichen Itza and differs in the method of attaching the tail.

Atlantean columns, in which a figure carved in stone is used as a support, are found at Chichen Itza in some numbers. On the east coast the only thing approach-

ing this form is a column, at San Miguel on Cozumel Island (fig. 165), on which is carved a kneeling figure which may be considered as supporting the lintel. We have previously stated that the columns were covered with stucco, and it is possible that the San Miguel type may have been quite commonly rendered in stucco which has now peeled off.

Interior columns are of the round variety and usually have square capitals. They will be fully discussed in connection with the flat-ceiling construction with which they are associated.

Ceilings.—The most distinctive characteristic of the architecture of the east coast in contrast with the rest of Yucatan was the use of flat ceilings supported by beams in place of the usual vault. The flat ceilings were formed of large wooden beams on which, at right angles, poles 2 or 3 inches in diameter were spread; the

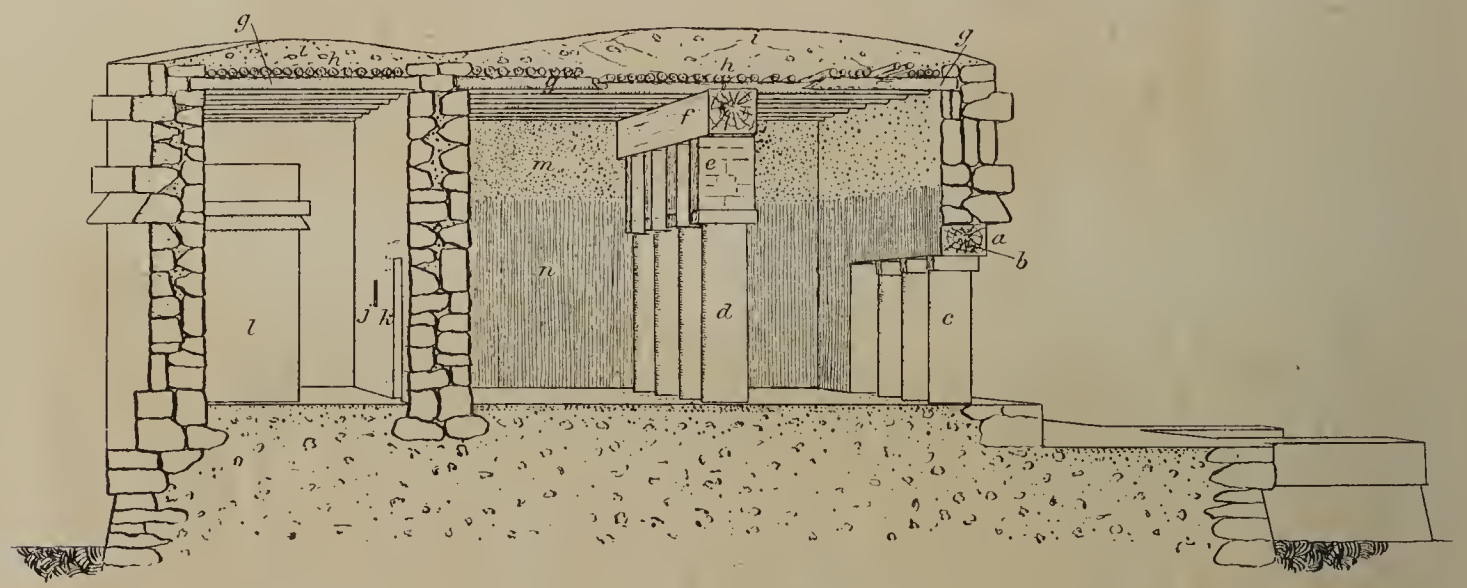


FIG. 12.—Cross-section of structure 21, Tulum (restored).

a, niche over door.
b, wooden lintel.
c, door-column.
d, interior column.
e, masonry pier.
f, roof-beam, 15 inches diameter.
g, roof-beams, 6 inches diameter.
h, roof-beams, 2 inches diameter.
i, rubble roof-cap.
j, window or ventilator.
k, door to inner room.
l, sanctuary.
m, blue paint.
n, red paint.

poles in turn were covered with a rubble cap a foot or more in thickness. These features are all present in the accompanying cut (fig 12). The building illustrated has two rooms of different widths. The narrower chamber at the left has two sets of beams running at right angles. The larger room has a row of columns down the center. On top of the square capitals is a short masonry pier on which rests a large girder, which in turn supports two smaller sets of beams and the rubble cap.

The flat ceiling had both advantages and disadvantages. It made possible the construction of rooms of much greater width than was possible with a vault, and it also gave rise to much more interior lighting through the accompanying introduction of columns. The larger room shown in figure 12 is 17.5 feet wide and 59 feet long. The great fault of the flat ceiling was that once the heavy cap was in place it became impossible to replace the wooden beams. Perhaps the builders thought that even if the beams gave way the concrete would have sufficient strength

to sustain itself. At any rate, there is evidence that the rotting of wooden beams caused apprehension in the days when the city was still occupied and led to various expedients to strengthen sagging roofs, such as the introduction of extra columns and piers or the splitting of large rooms into smaller chambers. To-day no flat ceilings are still in place at Tulum.[1] Figure 13 shows two examples which suggest the original form. In A the flat roof of the back room of a palace has fallen on to

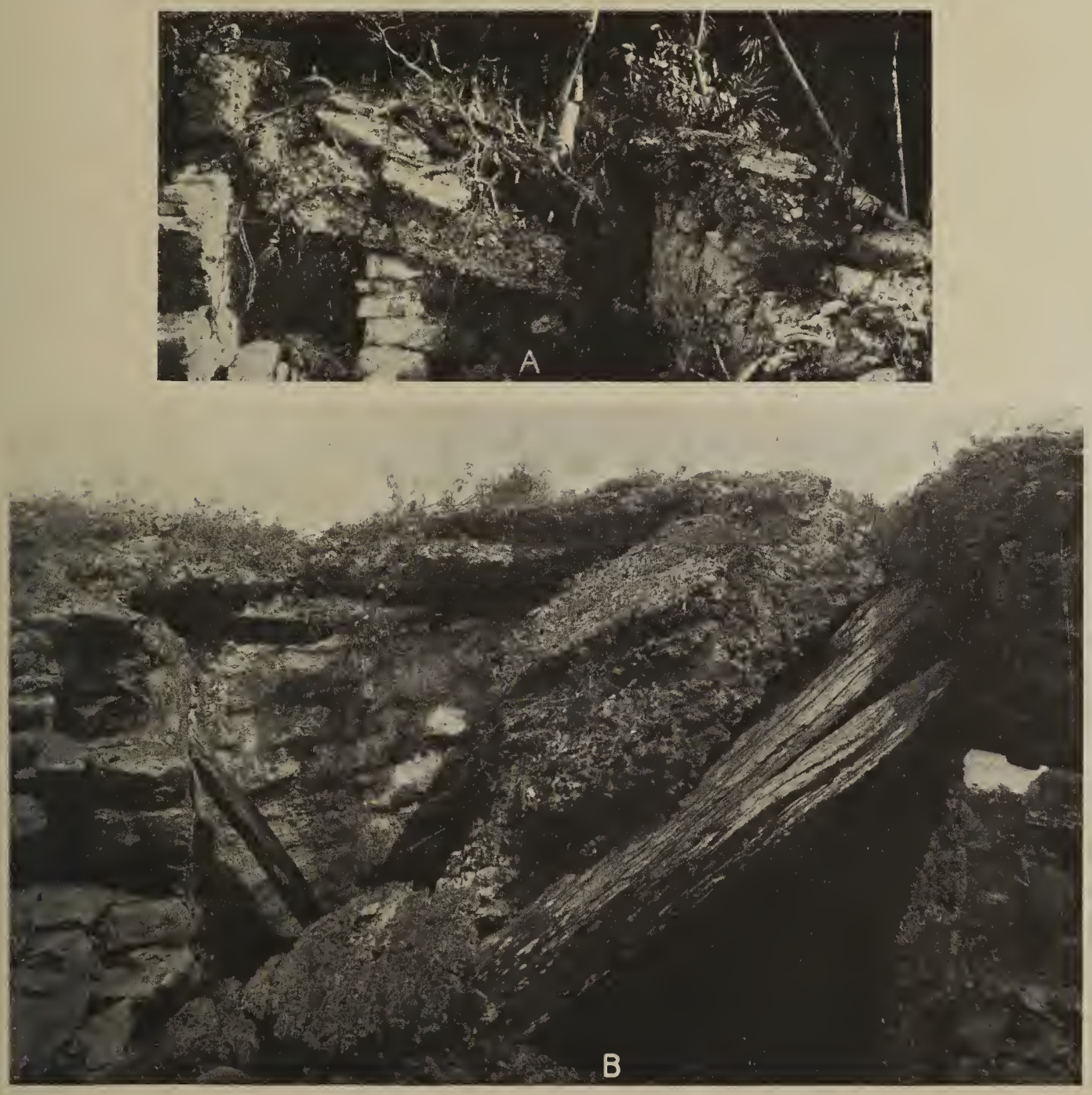


FIG. 13.—Fallen flat roofs, Tulum: A, structure 34; B, structure 54.

the top of and crushed in the roof of the sanctuary. The thickness of the roof is indicated by the rubble on top of the walls. Figure 13, B, shows what remains of the only flat ceiling still standing when Stephens visited Tulum in 1842. His description of this edifice is quoted on page 115.

The flat-ceiling construction is found in almost all of the larger buildings on the east coast, but rarely in smaller structures of the temple or shrine type. Else-

[1] The data for the reconstruction in fig. 12 was obtained (1) from beam-holes in the walls and (2) from molds of the roof-beams still preserved in fragments of the rubble cap.

where in Yucatan, at Chichen Itza, Ake, and Mayapan, the use of flat ceilings is suggested by the presence of parallel rows of columns, but this remains to be proved through a study of débris. In the Mexican highlands some such construction was in regular use. Mr. W. H. Holmes's careful studies at Mitla led him to draw reconstructions which differ from our figure 12 only through the absence of the small masonry pier on top of the supporting column.[1] It is reasonable to suppose, then, that the flat ceiling was one of the many architectural features introduced into Yucatan by Mexican invaders in the thirteenth century.

The traditional Maya ceiling is the overstepping vault. Two opposite walls of a room were made gradually to approach each other, each course of masonry projecting beyond the one below it, until they were only a few feet apart. Over the opening thus left flat capstones were placed. This device has no relation to the true arch, for each half has inherent stability by itself, whereas the true arch collapses if the keystone (or any other segment) is removed. Not only the sides but also the ends of a room may be made to approach each other, thus reducing the space to be filled by the capstones.

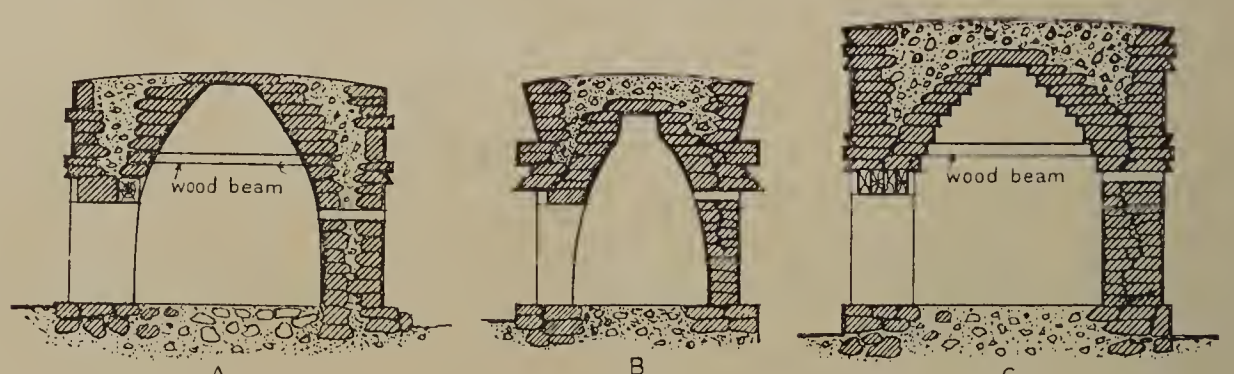


Fig. 14.—Types of vaulting, east coast of Yucatan: A, curved sides; B, bottle-shaped; C, overstepping.

On the east coast the vaults are for the most part of characteristically crude masonry. A few exceptions are to be noted (*e. g.*, Xelha, temple 1) in which the courses are beautifully regular and the walls approach each other in a series of evenly cut terraces. The usual shape shows slightly arched sides. A form peculiar to the east coast (fig. 14, B) has a double curve, which, in cross-section, suggests the outline of a bottle. The capstones are not so nicely fitted as elsewhere, nor are they painted, as was sometimes done in central Yucatan. Wooden beams at half the height of the vault are common here as elsewhere in the Maya area. It is supposed that they were inserted to facilitate the erection of the vault as well as to strengthen it after completion. The small offset at the spring of the vault which is customarily found in Maya buildings is rarely seen on the east coast. Half-vaults were employed in several instances. They were built against the walls of older buildings to form passageways or corridors. They are also found in tombs. The example here illustrated has the double curve characteristic of bottle-neck vaults (fig. 15).

[1] See Holmes, 1895–1897, figs. 82 and 92.

The superiority of the vaulted construction in comparison with the beam-and-rubble type is unmistakable. Indeed, the majority of buildings containing vaults are still standing, while all the flat ceilings have collapsed. The vault, of course, had been used by the Maya for many centuries before the introduction of the flat ceiling, and we shall later produce evidence that the inhabitants of the east coast resumed the use of the vault in the edifices built just before the arrival of the Spaniards.

Moldings.—Both substructures and buildings are decorated with moldings. In substructures they are merely a rectangular cornice, but on buildings there is much variation, which we shall examine in detail.

The façade of the typical Maya building of Yucatan is divided into two roughly equal parts by a medial molding. A second molding of the same type runs across the top of the façade, forming a cornice (fig. 16, *a*). The space between the two moldings is the principal field for decoration, which takes the form of geometric panels in relief, perhaps interspaced with small life forms. On the east coast the typical Yucatec façade division is very rare, for the lowest molding is placed at about two-thirds the height of the building, and the upper molding, if present, is found about a foot below the roof-line. This type of spacing conforms with that of some of the edifices at Chichen Itza which are assigned to the period of Mexican occupation or thirteenth and fourteenth centuries. This fact forms an important clue for dating east-coast remains.

FIG. 15.—Half-vaulted passageway, Castillo, Tulum.

The moldings themselves are composed of (1) a rectangular band flanked by triangular bands, (2) a rectangular band with a triangular band below it, and (3) a rectangular band by itself. These types may be seen on figure 16, the first type in *a* and *b*, the second in *d* and *e*, and the third in *f* and *i*. These forms we shall designate, respectively, as three-member, two-member, and one-member moldings. The two-member probably is evolved from the three-member form. Figure 16, *c*, shows an intermediate example where it is hard to decide whether it belongs to the three-member group or whether it is a two-member form surmounted by an outward-sloping wall. In figure 16, *d*, we have an example of the two-member type in which the source from which it evolved is suggested by the slope of the top of the walls.

Niches.—The more important east-coast buildings often had niches sunk in the walls over one or more doorways (plate 17, A). These niches, which are not to be confused with the sunken panels over the doors and under the lower molding, run from the top of the lower molding to the roof, cutting through the upper molding. In some cases the top was open, but in others it was covered by a slab of stone to protect the relief sculpture which the niches invariably contain. Average dimensions are 4 feet high, 2 feet wide, and 1 foot deep.

Roofs.—The roofs appear flat and are coated with a smooth layer of cement. In reality they are very slightly arched to shed the water. At Tulum and Tancah we observed three roofs which rose in terraces (figs. 113, 120, and 126). In each case the façade was of the usual type, and the one or more terraces of the roof itself were capped by roof-combs, a device of which we shall speak presently. All three buildings contained vaults which rose into the terraced portion of the roof. Professor A. M. Tozzer kindly informed me that he observed a somewhat similar construction while making his as yet unpublished survey of the Old Empire site of La Honradez in the northeastern part of the department of the Peten.

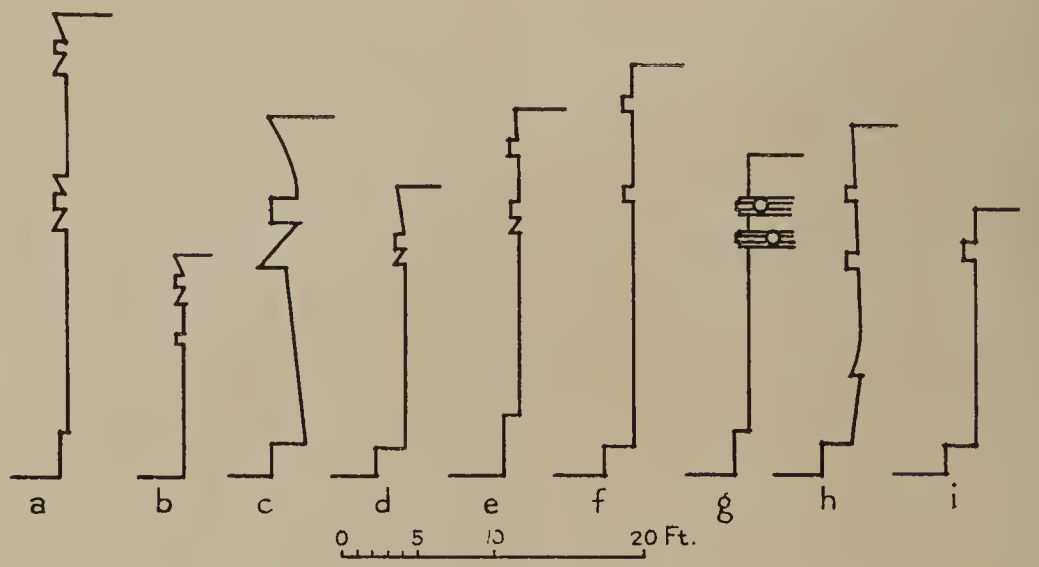


FIG. 16.—Types of moldings, east coast of Yucatan.

Roof Structures.—Maya architects constantly strove to give their edifices the appearance of great height. This effect was obtained partly by means of substructures, which sometimes were as much as a hundred feet high, and sometimes the lines of the building were carried upward by two types of roof construction. One of these, known as the "Flying Façade," is a continuation of the front wall of a building above the level of the roof, a device still employed to-day in the small communities in the United States. It is not found on Old Empire Maya buildings nor on the east coast, although not uncommon in the rest of Yucatan. The other means of adding to the height of buildings is the "Roof-Comb," which corresponds to the steeple of European architecture, but which differs in being oblong and in covering the greater part of the roof area.

The roof-comb has a long history. It first appears in Old Empire temples of the Peten region. The original form appears to have been an oblong mass of masonry rising from the roof, an enormously heavy construction. The first change

was the introduction of hollow spaces in the interior to lighten the load, from which was evolved a form consisting of two walls leaning towards each other and secured with cross-braces, so that the cross-section resembles a capital A. We then see the introduction of niches containing statuary in the two walls. From this evolved the latticework roof-combs of Palenque, the culminating stage of roof-combs in the Old Empire. With the stabilization of the Maya in Yucatan the roof-comb again appears, but in the form of a single high wall running down the long axis of the building in the center of the roof. This wall is usually pierced by several tiers of rectangular openings which either contained statuary or were filled with trelliswork of stone. In outline the Yucatec roof-comb may be rectangular, but more often it rises in a series of steps or terraces, forming what is known as a "castellated" roof-comb, the classical example of which is on the House of Pigeons at Uxmal.

On the east coast the roof-comb is confined to five examples found at Tulum, Tancah, and Xelha. They are all of the castellated type just mentioned. Four have rectangular openings, but the single example at Tulum is pierced with interlocking triangular spaces. Three of these buildings have the peculiar terraced roofs of which we have spoken. The roof-combs and also the type of moldings on some of these edifices suggest that they were erected before the Mexican invasion at the close of the twelfth century A. D.

Decoration.—This discussion of architecture, while defining the forms of the various types of buildings, gives little more than a suggestion as to their appearance, for it seems certain that they were heavily laden with painted and sculptured decoration which has been almost entirely obliterated. The artistic significance we shall discuss later, but it will be well to list here the parts of the building which were embellished. The parts of the edifice which were painted include: (1) the exterior walls, which were adorned with frescoes and perhaps solid color below the moldings; (2) the sunken panels over the doors; (3) the rectangular moldings; (4) the interior walls, which often bore frescoes or solid bands of color. The effect of this color is of course totally lost to-day, although its presence may sometimes be detected.

The use of sculpture in the round is confined to the roofs, along the edge of which small statues were often placed. These unfortunately are badly battered and usually broken off at the base. Low and high relief modeling in stucco is found, as follows: (1) large figures in high relief in niches over doorways; (2) low-relief figures between the moldings or on exterior walls; (3) stucco rosettes on rectangular moldings; (4) large stucco heads on the upper corners of the exterior walls; (5) small stucco heads on interior walls or columns.

Repairs and Renovations.—As many of the east-coast buildings must have been centuries old before they were abandoned, it is not surprising that we find evidence of repairs made by the natives. We have already described the trouble caused by the beam-and-rubble ceiling, which necessitated the introduction of masonry piers or even walls to prevent complete collapse. The outer walls seem to have caused similar trouble, especially when built too near the edge of the substructure. This was remedied by building a retaining-wall 2 or 3 feet thick along the edge of the substructure. The wooden beams used to support the vaults

and also the lintels must have been renewed at times, but this could not have been a difficult matter.

The feature most frequently renewed appears to have been the plaster on exterior walls. No less than twenty-three layers were counted on one building. This renewal of plaster may have been sporadic, but the known Maya and Mexican habit of ceremonial renewal may have caused it to be periodic. In the latter case we should expect renewals at the end of the 52-year period or of each katun (20-year period). We do not insist that the plaster count is a positive criterion of age, but the reader will observe instances where the katun renewal hypothesis agrees extraordinarily well with other factors bearing on chronology.

Summary.—The typical building of eastern Yucatan has a simple ground plan. It stands on a low substructure and a bench or step runs around the building itself. The doorway is narrow, and, if the building is large, it is divided by two or more round columns with square capitals. Over the door the lintel is set back a few inches to form a sunken panel, above which may be a niche containing relief sculpture. The walls flare slightly outward and carry one or two strings of molding set well towards the top. The interior may be vaulted or may have had a beam-and-rubble ceiling which has now fallen. There are one or more small windows and probably a small altar set against the rear wall.

CHAPTER III.

EAST COAST ART.

The art of the east coast, like the architecture, is a local style of Maya art which often shows Mexican influence. The surviving examples of sculpture are singularly disappointing both in the originals and in photographs. While this is partly due to the savage iconoclasm which has mutilated every example and hastened the process of natural disintegration, yet what is still present does not exhibit the firmness of line associated with Maya art of other regions. Frescoes, on the other hand, were delineated with a skill and vigor to which our reproductions do not do full justice. Like the sculpture, they have suffered mutilation; the eyes of even the most minute figures have been gouged out or the entire head has been chipped away. Perhaps the natives did not wish their gods to witness the abandonment of their temples and so made them blind.

We shall consider this subject under the following headings: stelæ, stucco relief sculpture, sculpture in the round, mural painting, frescoes, and ceramics.

STELÆ.

From the earliest times of which we have knowledge the Maya erected carved monuments of stone in front of their important temples. These stelæ are decorated with figures of gods and men cut in relief and also with written texts which often include one or more dates. In Old Empire sites the dates are usually of the type known as an Initial Series or Long Count, an exceedingly accurate system, for the same date can repeat itself only once in a period of several thousand years. In Yucatan, stelæ are not so common, and only three have been discovered with dates in the Long Count. Of these three, one is at Tulum. Instead of the Long Count, Yucatecan dates are often recorded in the Short Count or Katun (20-year period) Count, in which a date may repeat in approximately 260 years. One of these is at Tulum. In addition, several undated stelæ were seen at Tulum, and there is in the museum at Merida a sculptured slab said to have come from Cozumel.

TULUM. Stela 1 (plate 1, *a* and *b*, and fig. 17).
Present length, 6 feet 1 inch; width, 3 feet; breadth, 8 inches;
date, 9.13.10.0.0, 7 Ahau 3 Cumhu, 442 A.D.

The fragments of this monument were discovered by Stephens in the building we have called the Temple of the Initial Series. The stela must have once stood outside the building in the courtyard which it faces. In 1911, Dr. George P. Howe secured a correct reading of the Initial Series: 9.6.10.0.0, 8 Ahau 13 Pax, 304 A.D.[1] Howe's reading was open to doubt, owing to the poor photograph he secured, but was proved correct by the Carnegie Institution expedition of 1916. Additional fragments discovered in 1918 (in the light of new knowledge of glyph decipherment) disclosed a "lahuntun 7 Ahau" inscribed below the opening date on both the front

[1] Howe's article appeared in the American Anthropologist of 1911. Mr. Morley's confirmation of the date, published in the Year Book of the Carnegie Institution (1916) and the American Museum Journal (1917), makes the Christian year 290 A.D., an error of 14 years, according to his own correlation-tables published in 1920.

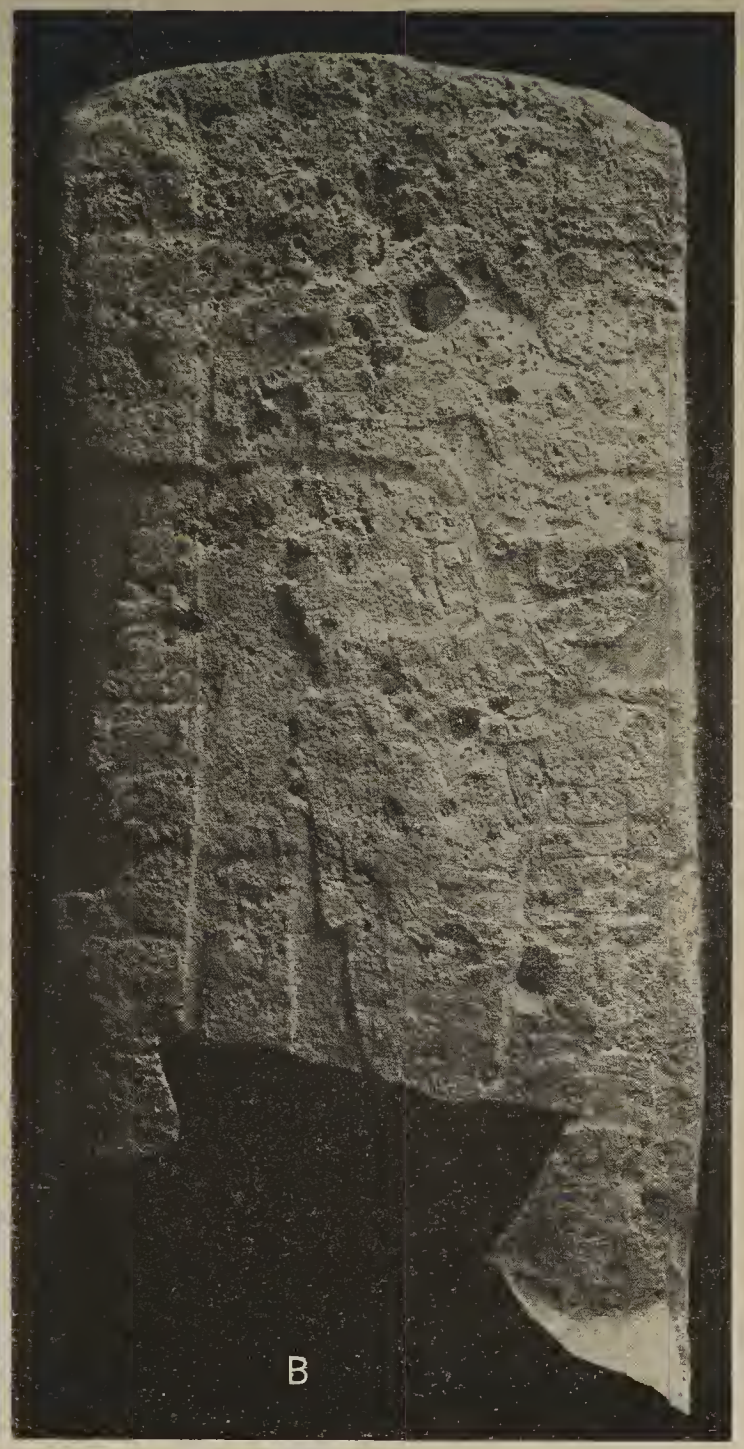
and the back of the stela. To read the date, it is necessary to find a lahuntun (10-year period) which ends on the day 7 Ahau and comes after 9.6.10.0.0. The first date to fulfil these requirements is 9.13.10.0.0, 7 Ahau 3 Cumhu. In publishing the stela in 1918 and 1920, Mr. Morley assumed that the "lahuntun 7 Ahau" on the back of the stela was not the same date as the one on the front, but was to be added to it. This gave the date 10.6.10.0.0.0, 7 Ahau 18 Yaxkin, which is a full cycle later than the Initial Series date. This reading was announced without a careful study of the style of the sculpture, which makes the later reading impossible,

FIG. 17.—*a*, *b*, stela 1, Tulum. *c*, *d*, early and late forms of ceremonial bar, Copan. After Spinden.

as we shall show presently. The most probable date, then, is 9.13.10.0.0, 7 Ahau 3 Cumhu, 442 A.D.[1] This is given additional weight because it so closely accords with the traditional date of the colonization of the east coast as recorded in the books of Chilam Balam.

Both sides of stela 1 exhibit a single standing figure which is framed by a line of glyphs down each side and across the top. Both sides are eroded and indistinct, the better preserved being the front or side containing the Initial Series. The figure on this face stands with his shoulders turned squarely towards the spectator, but with the head shown in profile. The head-dress contains two conventional faces and the usual trailing plumes. Across the breast is held the object known as a Ceremonial Bar. This is a kind of two-headed serpent. It is exceedingly common in Old Empire sculpture, and the study of the changes it undergoes has furnished important criteria for stylistic dating. (See fig. 17, *c* and *d*.) In the early examples the snake's body hangs in a loop (as at Tulum); in late specimens

[1] Professor A. M. Tozzer and Dr. H. J. Spinden agree with the writer on this point.



Tulum stelæ. A, B, stela 1; C, stela 2.

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the body is straight. At Copan nine stelæ exhibit the looped Ceremonial Bar. According to Mr. Morley's interpretation of the inscriptions, these Copan stelæ date between 9.9.0.0.0 and 9.14.0.0.0. Here, then, is an extremely important point for dating the Tulum stela, for if the date is 9.13.10.0.0 it accords stylistically with other Maya remains, but if it is 10.6.10.0.0 it places the Tulum looped Ceremonial Bar 250 years later than any other example now known. Conscious archaism could alone explain this, but there is no reason to believe the inhabitants of Tulum indulged in this form of artistic sophistry.

The reverse side of stela 1 is so weathered that little detail is visible. It represents a standing figure which faces towards the left and bends slightly forward. Long plumes fall from the head-dress both to the front and rear. Vague as it is, this face of the stela is important, because it resembles a stela said to have come from Cozumel.

TULUM. Stela 2 (plate 1, *c*).

Present length, 4.25 feet; width, 1 foot 10 inches; thickness, 9 inches; date, Katun 2 Ahau, 1262 A.D.

In front of the western doorway of the Temple of the Frescoes stand the remains of a large altar or a small platform mound. Built into one side of this, the sculptured face turned inward, was found the upper fragment of a dated stela. The piece recovered, perhaps three-fourths of the original stone, has a rounded top and is dressed, though not sculptured on the back and sides. The subject portrayed is a figure in profile sitting or kneeling on a square throne. The right arm holds an indistinct object in front of the face and a loin-cloth hangs to the ground behind. The head-dress is formed by a large bird-head, perhaps the macaw, above and behind which rises a second head. On top of the upper head, in the upper right corner of the stela, is a tun sign. The whole composition is surrounded by a band of small circles set between parallel lines.

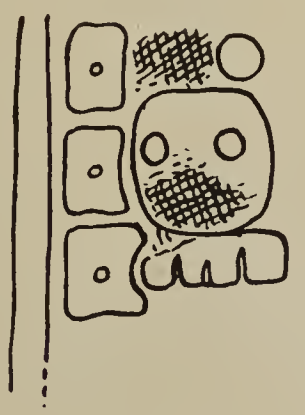

FIG. 18.—Inscription on stela 2, Tulum.

Stylistically this monument most closely resembles those found at the Cocom capital, Mayapan. The subject portrayed, however, goes back to the time of the Old Empire. The border of circles also is found on Old Empire monuments, although much more common on the late stelæ of Yucatan.

Over the bird-head of the head-dress and to the left of the upper head is the glyph shown in figure 18. It would hardly be possible to identify it were it not for the custom in Yucatan of distinguishing the various katuns (20-year periods) by the number of the day, Ahau, on which they ended. The numbers attached to Ahau run from 1 to 13; hence the series of 13 katuns covered a period of approximately 260 years. The usual glyph for Ahau is an oval face with two staring round eyes, a suggestion of a nose, and an oval mouth. On stela 2 we can recognize the outline of the glyph and the two eyes, but the nose and mouth have weathered away. Over the right corner of the glyph is a single dot, to the left of which the stone has broken away. This space contained either one or two dots, so that the coefficient of the glyph was either 2 or 3. At the time when this type of dating

was in use it was customary to space the dots widely apart. Hence we judge that the correct reading is katun 2 Ahau, for the dots would be in actual contact were the coefficient a 3.

Our correlation with Christian chronology, then, must be based on the following: *katun 2 Ahau ended in 1004, 1261, and 1517 A.D.*

The early date here may be ruled out of consideration because there is neither historic nor stylistic evidence to connect it with this stela at present. The late date—1517—is the reading selected by Mr. Morley, an opinion which the writer does not share, for this reason: Tulum was almost certainly sacked and depopulated by the

FIG. 19.—Stela 3, Tulum.

Pachecos in 1544, and it is extremely improbable that a stela dedicated in 1517 should have been broken up and used for building material before 1544. The Maya, of course, like all other peoples, made use of their old sculptures which were no longer fashionable, but even in the great centers of stone carving, like Copan, much more than 27 years elapsed before this happened.[1] Granted, then, that 1004 and 1517 are both unlikely, the correct reading is probably 1261 A.D. The style of the monument, which resembles the Mayapan stelæ, makes this date quite satisfactory.

TULUM. Stela 3 (fig. 19).

Present length, 1 foot 8.25 inches; width, 1 foot 9 inches; thickness, 8.5 inches.

This fragment is built in the south wall of shrine 40 (fig. 100) at Tulum. It is the rounded top of a badly weathered stela. The design represents part of a head-

[1] Mr. Morley (1920) cites the examples of reused monuments at Copan as at end of note. From these it appears that no stone was reused for nearly 120 years, even allowing the minimum time on all doubtful readings, and that the average elapsed time was about 165 years. Was the Tulum stela reused, then, after less than 27 years?

Stela 24 (9. 2. 10. 0. 0)	under stela 7	(9. 9. 0. 0. 0).
Altar J′ (9. 0 to 9. 5)	under stela 10	(9. 10. 19. 13. 0).
Altar K′ (9. 0 to 9. 5)	under stela 10	(9. 10. 19. 13. 0).
Altar X (9. 5. 19. 12. 18?)	under stela 5	(9. 13. 15 or 9. 14. 0).
Altar Y (9. 7. 1. 7. 6?)	under stela 4	(9. 17. 12. 13. 0).
Altar A′ (9. 3 to 9. 7)	under Hier. Stairway	(9. 16. 5. 0. 0).
Stela 9 (9. 6. 10. 0. 0)	under stela 8	(9. 17. 12. 6. 2).

dress, a head which may be the skull of the Death god, and an arm and hand clasping a staff which runs along the left side of the panel. The border contains a series of small circles like stela 2, with which this example belongs stylistically.

TULUM. Stela 4.

Present length, 5 feet; width, 2 feet 1 inch; thickness, 8 inches.

On the platform at the back of the Temple of the Frescoes was found a worked slab of stone with a rounded top. The upper face and sides were dressed but not carved. When turned over, the unexposed face was found to be covered with plaster from half an inch to an inch in thickness. The left half was painted blue and the right half was the natural white of the plaster. No painted design could be detected. This find was of some importance, because it is the only example of an unsculptured, plaster-covered stela which still retains its color. The side with plaster still adherent probably was the back of the monument and the front doubtless exhibited a painted design.

FIG. 20.—Stela 5, Tulum.

TULUM. Stela 5 (fig. 20).

Present length, 5 feet; width, 2 feet 5 inches; thickness, 6 inches.

In front of the Castillo stairway are traces of a small terrace. On this, 12 feet in front of the south balustrade, was found stela 5.

It is a dressed slab with a rounded top and no carving. Nearby were fragments of plaster, some of which fitted so well (fig. 20) that it seems certain that the whole monument was once covered with a thick layer of plaster like stela 4.

TULUM. Stela 6.

Length, 5 feet 5 inches; breadth, 1 foot 10 inches; thickness, 6 inches.

This monument was found 10 feet south of stela 5. It also is an uncarved but dressed slab with a rounded top. No traces of decoration were found, but probably at one time it was plastered and painted.

TULUM. Stelæ 7 and 8.

Stephens[1] writes that at the back of the Temple of the Frescoes—

"were two stone tablets with rounded surfaces, six feet six inches high, two feet four inches wide, and eight inches thick, having upon them worn and indistinct traces of sculpture."

These we did not find. Perhaps they formed part of the collection made by Stephens and destroyed by fire in the United States.

THE COZUMEL STELA.

Length, 5 feet; width, 1 foot 6 inches.

In the Peabody Museum of Harvard University is a plaster cast of a stela, made by Charnay in 1882 from the original in the museum at Merida, Yucatan, which is said to have come from the island of Cozumel. I can find no published notice of this monument and can adduce no proof that it actually came from Cozumel except that the position of the chief figure and the clothes resemble the reverse side of stela 1 at Tulum. An inscription evidently once occupied the L-shaped panel in front of the chief figure, but of this no trace remains. There appear to have been two glyphs as well in front of the small figure.

FIG. 21.—Stela said to be from Cozumel Island. Courtesy of Peabody Museum, Harvard University.

STUCCO RELIEF SCULPTURE.

Apart from the stelæ, east-coast sculpture is generally subordinated to architecture. Relief figures are found in the vertical niches above the doors, basreliefs are seen on the walls and columns, and small statues in the round appear on the edges of the roof. In all these types the framework is made of stone or clay covered with plaster, which was originally finished in brilliant colors. Although deliberate iconoclasm and a tropical climate have combined to mutilate all examples of sculpture, and it is therefore not entirely fair to judge by what remains, there is no denying that east-coast sculpture is provincial in character and entirely lacks the vigor of Maya art from other regions.

Eleven vertical niches over the doors at Tulum contain sculpture in high relief, and other statues have apparently been destroyed by falling walls. At Cancuen and Tancah, also, there are niche figures. The subject of the sculpture is either the "Diving god" or a "standing" figure, framed by a row of feathers, as shown on plate 2, B, D. It will be seen that the bases of these statues are all broken away,

[1] Vol. II, p. 403.

Tulum sculpture. A, structure 3; B, D, Temple of the Frescoes; C, Castillo.

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and we have a suspicion that the figures may not have been standing, but seated cross-legged.

By far the most common niche figure is the Diving god (fig. 22), a deity with a bird-tail and with wings on his arms and shoulders, like a Christian angel, who is represented in the act of flying downward. This subject does not appear in Old Empire art, but is found in the three Maya codices. While gods A and B sometimes appear in this position, it is more often god D who is thus portrayed. We would call attention especially to a representation of god D in the act of "diving" in front of a temple and holding in his hand the hieroglyph of the Corn god.[1] God D is usually identified as Itzamna. Furthermore, a Diving god, which Seler[2] identified as Tonatiuh, the Sun god, appears in the Mexican codices.

FIG. 22.—The Diving god, Temple of the Diving God, Tulum.

Other examples of the Diving god, which offer slight variation in detail, are shown on plate 3, A and B. The first example is badly weathered, but the second is still brightly painted in orange and red. An unusually elaborate example in color is seen on plate 23. The colors employed are red, blue, black, and orange. The latter is used only on the plates of the collar and may represent gold. Blue and red are used on the body, while the background and some of the feathers are black. On either side of the body and tail are twisted strands of brightly colored rope. Two serpents, one almost obliterated, emerge from the tail. The whole effect is brilliant, yet confusing in the present battered condition of the sculpture.

[1] Codex Peresianus, De Rosny edition, Paris, 1887, pl. 17.
[2] Codex Vaticanus 3773, Berlin, 1902–1903, p. 11.

The method of construction employed in these figures is seen in figure 23, which shows two reliefs from which the plaster has largely peeled off. In A the limestone base on which the face was modeled is seen. In B the head was built on a drum-shaped stone at the bottom. Above this the shoulders and upper arms are indicated by a semicircle from which the wings radiate. The right forearm is still partly preserved, but the left arm is broken at the elbow, revealing the fact that the upper arm was modeled over a pottery tube set in the wall. The left knee, with a band below, is still present, but the right leg is indicated merely by two unshaped stones set in the wall.

FIG. 23.—Skeletons of stucco figures, structure 20, Tulum: A, outer doorway; B, inner doorway.

Heads, or more rarely full figures, modeled in low relief, are found on interior and exterior walls and on columns. At Tulum they are found on the Castillo, structure 3, the Temple of the Initial Series, the Temple of the Frescoes, and structures 20, 25, and 55. Typical examples from the Castillo on figures 47 and 48

Tulum sculpture. A, Castillo; B–D, Temple of the Frescoes.

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exhibit crude workmanship and simple motives. Two unusually elaborate examples are shown on plate 3, C and D. They represent small human figures enmeshed in the coils of serpents. The details are lost, owing to the violent destruction of the heads and subsequent weathering.

The heads on walls are of every variety and can not be classified. Like the niche figures, they are usually built over a framework of stone, which, in the smaller examples, is merely a peg on which the modeled plaster hung (fig. 48, *a*). This makes it probable that their location was planned by the architect at the time the building was erected.

A special form of stucco head in low relief appears on the corners of the top of the Castillo (fig. 44) and the Temple of the Frescoes at Tulum (fig. 24). These are respectively 4 feet 8 inches and 5 feet 4 inches high. In the Castillo example the face appears between the moldings and the head-dress above the upper molding, but in figure 24 only the nose and eye come between the moldings, while the head-dress and "eye-plate" are placed over the upper molding and the mouth and chin beneath the lower molding. The subject in the case of the latter is god D, Itzamna, but it is doubtful in the Castillo example.

FIG. 24.—Stucco head on the southwest corner of the Temple of the Frescoes, Tulum.

The closest stylistic relationship of these heads appears to be to the *caras gigantescas* at Izamal and Nocuchich. A study of Yucatec ruins makes evident the fact that such large faces were not an uncommon decoration once, but have completely crumbled away almost everywhere. The back wall of the central portion of the Castillo at Tulum (plate 12, B) is covered with stone pegs, which suggest that it may have been thus adorned.

SCULPTURE IN THE ROUND.

Sculpture in the round is uncommon on the east coast. At Tulum, in front of structure 3, we found a very much battered stone statue, of which a photograph is seen on plate 2, A. It evidently represents no more than the base over which the plaster was modeled. Other examples of sculpture in the round include small statues set on the edge of the roofs at Tulum and Tulum Playa. Like the statue described, they now exhibit only the stone base on which the plaster was laid. We secured no adequate photograph of this type.

The largest and most elaborate example of sculpture in the round on the east coast is the Chacmool figure at the ruins of the same name (fig. 175). It is 4 feet 6 inches long, 2 feet 6 inches wide, and 1 foot 8 inches high. It portrays the usual

reclining body, but lacks the bowl typically found on the belly. The head is broken away. This figure is made of plaster modeled over a masonry core.

Other large sculptures on the east coast include serpent-columns and serpent-balustrades. The heads on the serpent-columns at Tulum have been destroyed, while those at Nisucte have not been described. A full account of the serpent-balustrades at El Meco has never been published.

MURAL PAINTING.

Our observations lead us to believe that the greater part of the east-coast buildings were painted both inside and out, either with solid colors or with frescoes. To-day the paint has largely disappeared and it is difficult to determine the extent of color-bands or the outline of frescoes. At Tulum we observed traces of paint in rooms *a*, *c*, *e*, and the passageway of the Castillo, the exterior and interior of the Temple of the Diving God and the Temple of the Frescoes, rooms *a* in structures 20, 21, and 25, and the exterior of structure 55, as well as on the sunken panels over the doors of various other buildings. At Tancah there are frescoes in temple 12.

In room *a* of structure 21 at Tulum there is a broad blue band at the top, and the rest of the wall is painted red, as indicated in figure 12. The doorway of room *a* of the Castillo, which leads to the inner chamber, is shown on plate 5, B. The sunken panel is painted a turquoise blue outlined in black, with a simple geometrical pattern in white in the center. The north half of the room to the height of the spring of the vault is painted red and the south half is blue. This may have a symbolical significance, for the Maya are known to have associated colors with the world directions. Red is usually assigned to the north and black to the south, although the evidence is conflicting and in certain cases these colors are reversed.

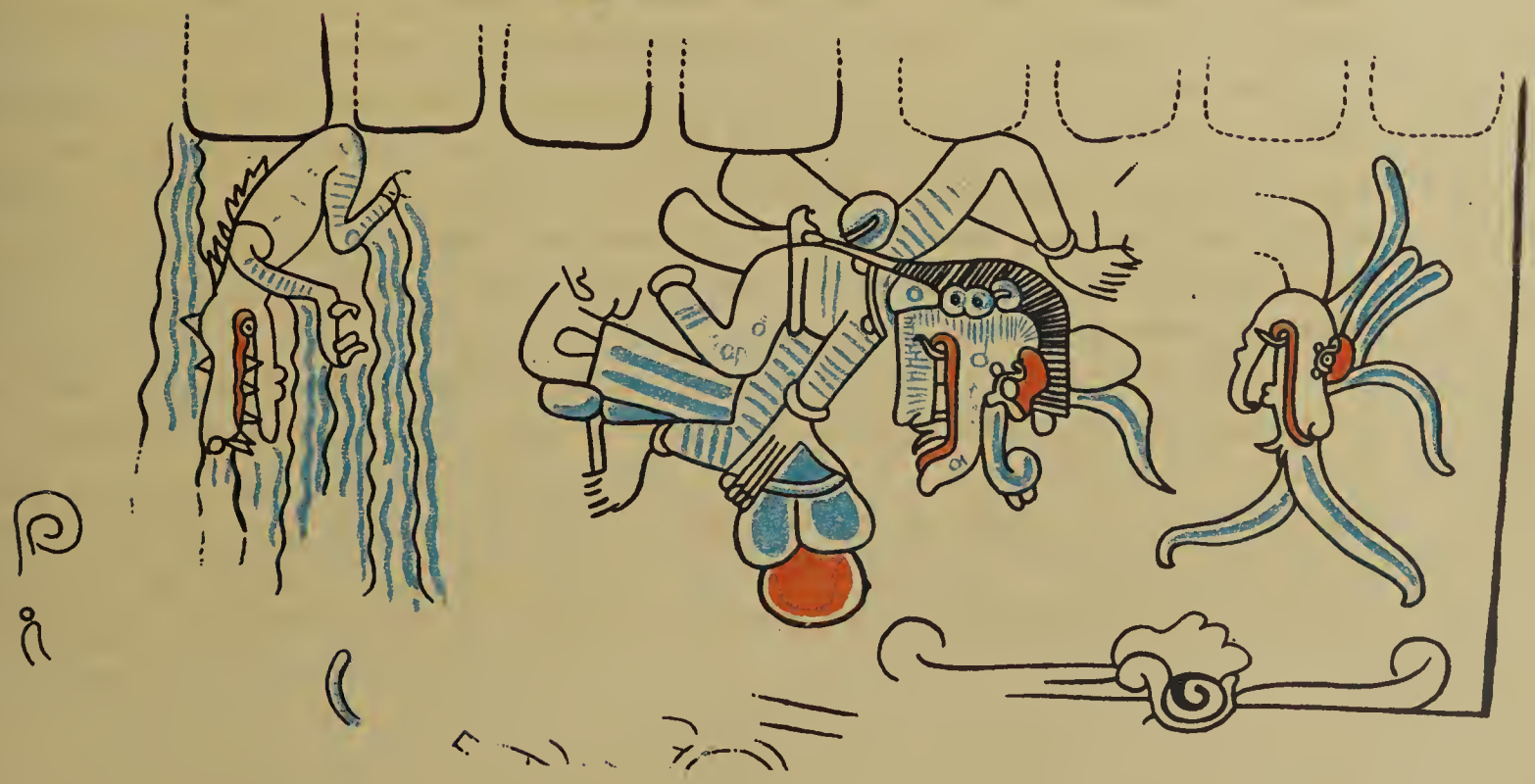
FRESCOES.

Frescoes and painted walls were observed at several cities, but only the frescoes seen at Tulum were copied, owing to lack of time and proper equipment, and the record obtained at this site is by no means complete. The examples which we reproduce are from the passageway in the Castillo, the outer and inner walls of the Temple of the Diving God, and the west and north corridors of the Temple of the Frescoes. These paintings may be placed in three stylistic groups.

Our first type is found in the passageway and wings of the Castillo and is shown on plate 4. It depicts large figures in broad, crisp, black lines of unusual vigor. The background is the natural white of the plaster and the supplementary colors are turquoise and orange. The general effect is of greater restraint and severity than in the other types. In subject-matter this group shows more direct Mexican influence than the others.

A second class of painting is seen on the inside of the Temple of the Diving God (plate 5, B). The figures are about half the size of those in the first group. The outlines are strongly executed, but with a thinner line, and they are partially obscured by the wealth of detail. Portions of the figures are rendered in red and the background is turquoise blue. Painted panels are outlined by broad bands on which simple patterns in white are silhouetted against a black background.

A



B

Frescoes in the Castillo, Tulum. Height of A: 5 feet.

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The third group is found on the outer walls of the Temple of the Diving God and the corridors of the Temple of the Frescoes (plate 7). The figures are slightly smaller than those of the second group and have an even greater mass of detail. The backgrounds are either white, the color of the plaster, or a dull black, and the only additional color is turquoise blue.

The chronological significance of this grouping is probably not great. Types 2 and 3 are seen on outer layers of plaster. Type 1 is the next to last layer, but the outer surface in the passageway in the Castillo is painted with badly weathered figures in very similar style. The actual painting was probably done by the priests, and stylistic differences should perhaps be attributed to different traditions preserved by the priesthood of the various temples.

Surprisingly little relationship is seen between the Tulum frescoes and other Mayan and Mexican paintings. The wall-paintings at Santa Rita,[1] in northern

25

FIG. 25.—Potsherd, Chichen Itza. ×0.5.
Courtesy of Peabody Mus. Harvard University.

FIG. 26.—Manikin scepter.
After Spinden.

26

British Honduras, portray many of the deities seen at Tulum; but the quality of the line is totally different, many more colors are used, the tone of the design is decidedly restless instead of calm, and many small details are directly borrowed from Mexico. They therefore bear little direct relation to the frescoes at Tulum, but show distinct affiliation with the wall-paintings at Mitla. In central Yucatan frescoes have been copied on the Temple of the Tigers at Chichen Itza by Miss Breton[2] and at Chacmultun, Tzula, and Xkichmook by Thompson.[3] Wall paintings are also noted by Stephens[4] at Tankuche and Xul, but these have not been published. In addition, painted capstones on the vaults have been seen at Kewick, Uxmal, and Chichen Itza. With the exception of two capstones, all these paintings are totally unlike those at Tulum, both in subject-matter and in treatment. The two capstones mentioned come from Chichen Itza and Kewick. They each represent a religious subject, but the style is quite unlike that at Tulum.

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[1] These frescoes are reproduced in color by Gann (1901).

[2] Copies of these frescoes are exhibited in the Peabody Museum, Harvard University. They have not been published, but Miss Breton has brought out a short description entitled "The wall paintings at Chichen Itza" (Int. Congr. Amer., XV session, Quebec, 1906, pp. 165–169).

[3] These have been published in the Peabody Museum Memoirs, vol. III, No. 1, plates 2, 8, and 9, and Field Columbian Museum, Anth. ser., vol. II.

[4] 1848, vol. I, pp. 204–205, and vol. II, pp. 92–93.

The three surviving Maya codices all depict religious subjects, and through these we can identify or find parallels to most of the figures on Tulum walls. The codex stylistically closest to the frescoes is without any doubt the *Peresianus*,[1] but even here the likeness is not sufficiently close to be significant.

We are forced to the conclusion, then, from this survey of Maya paintings, that our frescoes at Tulum, while belonging in the general current of Maya art, neither contribute to nor are derived from any source which we can determine. However, they find a very close parallel in a surprising source, namely, certain potsherds from Chichen Itza, which so exactly resemble the Tulum workmanship that the same hands might have created both (fig. 25). These pottery fragments are pieces of large vessels 2 or 3 feet high, so the curve is very slight and the figures are almost as large as those in our third style of fresco at Tulum. The clay of the vessel-walls has been covered with a thin coat of plaster, which was painted while still wet, like the frescoes.

CASTILLO FRESCOES.

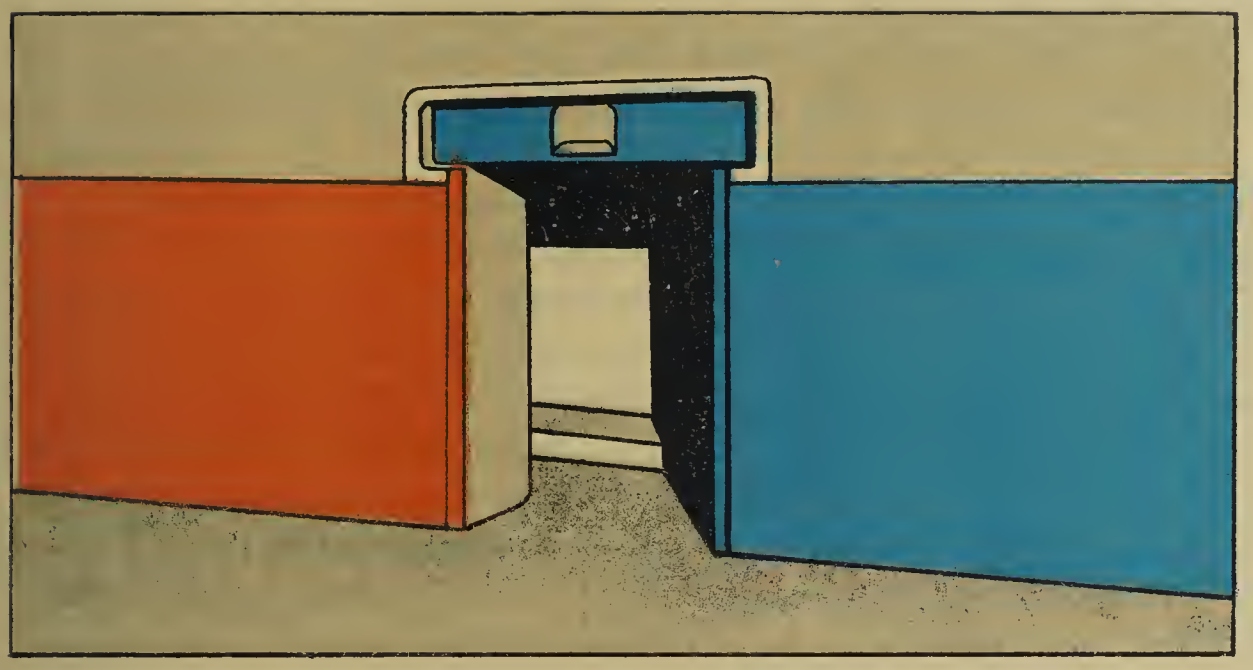
The mural paintings in the Castillo are found on the east wall of the passageway which unites the two wings. They formerly extended into the two adjoining rooms (see fig 41), but exposure to the weather has almost obliterated them, except where they were protected by the vault of the passage. The outer face of the wall is decorated with frescoes very similar to those that we shall describe, but obscured by mold and dirt. At the top is a row of glyphs too indistinct to permit recording or deciphering.

The second layer of plaster was revealed for several feet in the northern half of the passageway, where the outer surface had crumbled away. Along the top of the wall a series of half-effaced loops can be seen, which evidently formed a constellation-band like the one found on the outer wall of the Temple of the Diving God. Below this is an array of deities and symbolical animals of the general type seen in both Mexican and Maya codices. The figure in the center of plate 4, B, represents the Maya divinity known as god D,[2] who is associated with the feathered serpent, with water and rain, with plants and vegetation (especially corn), and with fish and shells. God D is evidently closely related to the "Long-Nosed" god of the Old Empire sculpture and so closely resembles god K of the codices in appearance and attributes that by some the two are thought to be identical. God B is identified either as Kukulcan, the Feathered Serpent, god of the Air and Maya counterpart of the Mexican Quetzalcoatl, or as Chac, the god of Rain. This point has been debated at length by Mayan students without reaching positive results.

The figure seen in the frescoes has a long, turned-down nose surmounted by a large scroll; the mouth has projecting fangs, and the eye is surmounted by an "eye-plate" of reptilian character. On the head is a crest suggestive of the painted monkeys found on pottery vessels in Nicaragua and Costa Rica. At the small of

[1] *Codex Peresianus* in the Bibliothèque Nationale in Paris. Ed. de Rosny, Paris, 1887 (in colors) and 1888 (black and white). Ed. Gates, Point Loma, 1909.

[2] The Maya gods represented in the codices, in view of the uncertainty of identification, are usually designated by letters, according to a scheme devised by Schellhas. An English translation of his text will be found in the Peabody Museum Papers, vol. IV, No. 1.



A

B

TULUM

A.—Doorway in room *a* of the Castillo (restored).
B.—Frescoes on the east interior wall, Temple of the Diving God.

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the back is a circular object which may be a bell. One hand is raised above the head, grasping a serpent, the head of which is seen near. The other hand holds an inverted bowl containing three large lumps of incense. This symbol we discuss fully below.

At the left side of plate 4, B, we see a peculiar-looking animal known among the Aztecs as Cipactli, the primordeal alligator from whom the earth was created. This beast is definitely associated with the Aztecs, and, like so many other mythological conceptions, was doubtless inherited from their predecessors, the Toltecs. Its presence at Tulum we can only regard as proof of strong Mexican influence.

Beneath the row of deities and animals is a procession of standing or striding figures. Those directly beneath plate 4, B, are effaced, but one nearby is shown in A. The head and shoulders of this figure have been destroyed by malicious chipping away of the plaster on which they were painted, but the position of the head is indicated by the head-dress, which consists of a central turban-like affair set with disks on the sides and drooping plumes at the back and front. A long feather cloak hangs from the shoulders to the hips, and the legs are adorned with bands and tassels, while elaborate sandals appear on the feet.

In the hand (at the right side of the picture) is grasped a manikin scepter. This object appears throughout almost the entire range of Maya art (fig. 26). It consists of a diminutive figure set on one end of a staff formed by a serpent which issues from the abdomen of the small figure. The conception has been thought phallic by some, but this is unlikely, owing to the rarity of phallic symbols in Maya art before the advent of the Toltecs. Its true nature is apparent in certain Old Empire sculptures, which exhibit a celt set in the upper end. We are dealing, then, with a conventionalized ax with a small carved figure at the poll and a serpent-head at the butt—perhaps a symbol of authority conventionalized almost past recognition, like the mace carried in the House of Commons. The Old Empire examples all have figures of the Long-Nosed god on the upper end, but the Tulum example portrays a little animal with cloven hoofs and distended belly, perhaps a deer.

At the bottom of plate 4, A, are parts of a serpent-body and a tiny head, which may be that of god C, the North Star god. Above is a bowl containing offerings of incense and also the head of a serpent. At the top, directly over the chief figure, is part of a scorpion like those seen in the codices. This is evidently another one of the figures attached to the constellation-band already described.

Frescoes on the Temple of the Diving God.—This temple, which shows two periods of construction, is a small building standing on the north side of the inner inclosure at Tulum. The interior east wall and the exterior north and west walls were painted with frescoes. The interior frescoes (plate 5) adorn the entire back wall of the temple. They are covered with mold and a limestone deposit caused by sweating of the plaster, and they can not be clearly seen in the obscure light. The plaster on which they are painted is now dry and crumbles rather readily. The frescoes which we publish are at the north end of the wall. They are reproduced from a photograph and a hasty colored sketch by Mr. John Held.

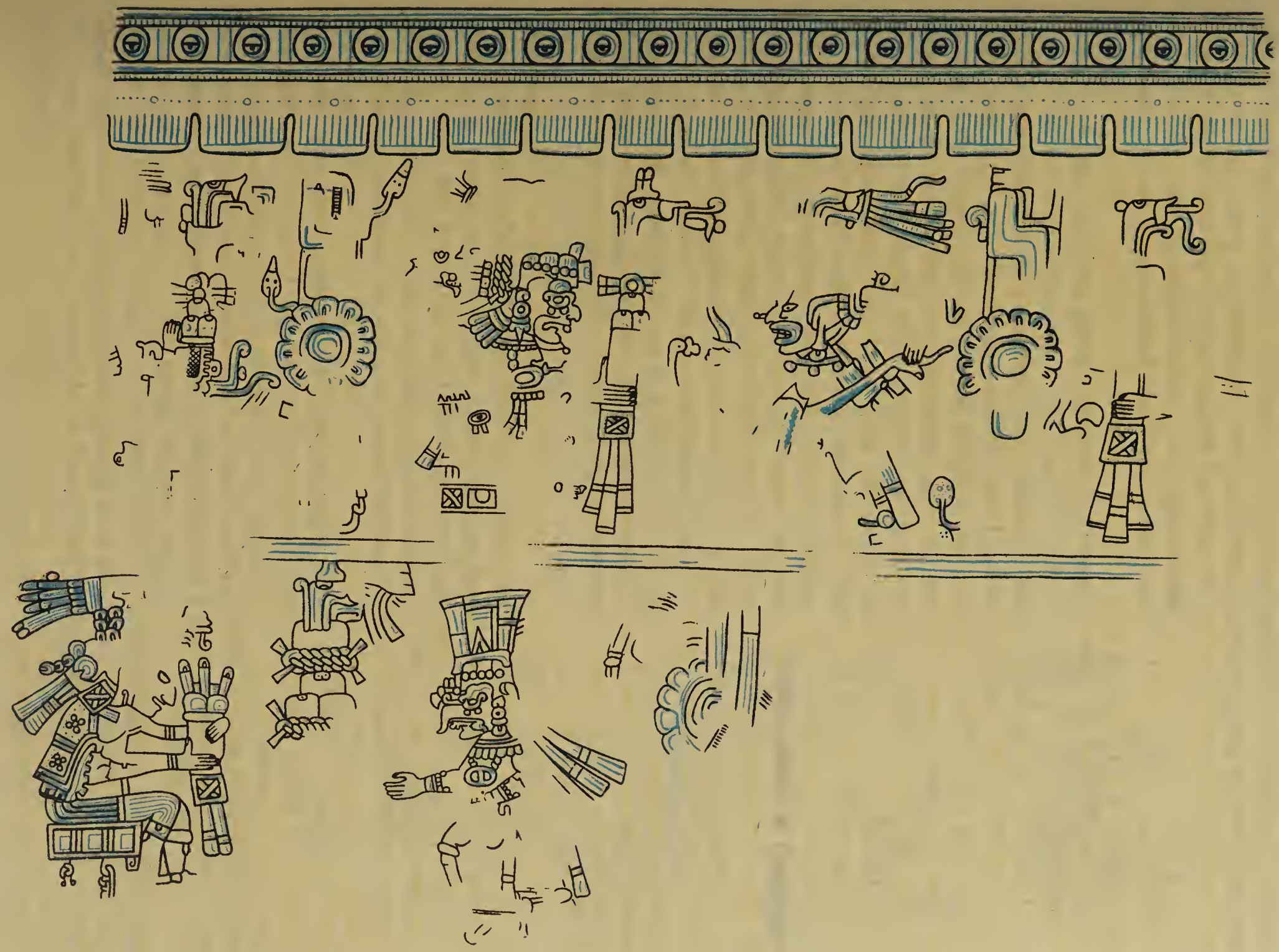
The painted design consisted of a series of six figures, of which we reproduce only one. This series was outlined by a two-headed serpent. The two heads are found at the base on either side and were joined by a body which ran up the wall and then across the top. The head unfortunately did not appear on our photograph, but plate 5 shows the body running up the wall and then at right angles across it. The pattern on the body is uncertain, but probably was a constellation-band. Across the top of the panel beneath the serpent-body is a second band, also much effaced, which surely is a constellation-band. The pattern is a series of small motives, among which is the sun-symbol, outlined against a black background.

The principal figure is an anthropomorphic creature with a bird-head, human arms and body, and jaguar-claws. From the mouth projects a long tube with loops at the end. The conception is probably similar to that found on a pier of the Temple of the Cross at Palenque, which represents an old man with a tube in his mouth, from which he evidently blows smoke. The figure on the frescoes is painted in black and brightened by touches of red. The background is painted a vivid blue-green, the color of the water as seen from the cliffs at Tulum.

Only the frescoes on the northern half of the west façade are still preserved, and these, according to photographs taken in 1916 and 1922, are disappearing rapidly, although the plaster is solid. The outlines are supplied in black and details are added in blue. I am unable to say whether the background was painted. At the top of the design (plate 6)[1] is a constellation-band of the type seen in the Castillo passageway, but in a much better state of preservation. Beneath this, bearing symbolical objects, are three series of deities, which are separated into rows by the bodies of intertwined conventionalized serpents in the same manner as in the Temple of the Frescoes.

The upper panel contains the representations of two deities. The figure on the left is god D, the Roman-Nosed god, one of the most important figures in the codices, who is usually identified as Itzamna. God D is obviously a benevolent deity with universal power; he rules both the night and the day, and he is connected with the serpent, though not so closely as gods B and K. In Old Empire sculpture his head is frequently joined on one end of the Two-Headed Dragon motive. In both Old Empire art and the codices he often is associated with the sun (kin) symbol. In the frescoes here he is represented on a throne, a fragment of which may be seen. (Compare this with the throne of the left-hand figure in the bottom panel.) His head-dress is indistinct, but includes an elaborate knot (a motive of which we shall speak later), and probably terminates in a reptilian head. In his hands he carries a long staff with trailing feathers, above which is a kin sign. On the staff in front of the face are three loops, which may be incense, and at the top is the head-dress of the Corn god, a conventionalized ear of corn surrounded by leaves. Behind god D is a large rosette, and at the left side of the plate is a bowl of offerings, also capped by the head-dress of the Corn god.

[1] Three of the heads on this plate have been published by Mr. Morley (1918), erroneously labeled "Temple 16." Our plate 6 is drawn from a photograph and colored from drawings made by Dr. Gann in 1916.



Frescoes on the West Facade, Temple of the Diving God, Tulum.
Height: about 3.5 feet.

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The right-hand figure in the upper panel of plate 6 faces god D. The original posture is uncertain. An arm clearly runs across the body, terminating in a hand which clasps another hand. In front of the face apparently is a third hand clasping a short wand with a curved top. The head-dress is that of god E, the Corn god. Behind the divinity is a large rosette like that behind god D. At the right end of the upper panel is a hand clasping a standard like that carried by god D.

The lower panel on plate 6 is the center panel on the façade of the building. The section reproduced again represents two divinities. That on the right is clearly god B, already seen in the Castillo passage, who may be recognized by his long, turned-down nose, surmounted by a scroll, and by his peculiar mouth. He is represented here with an elaborate head-dress, the top line of which is uncertain and the back completely obliterated. He is apparently advancing towards a bowl of offerings with outstretched hands. The bowl itself has disappeared, but the offerings still remain. They consist of three large lumps above and below which are elaborate knots. Above the upper knot is another lump in which is set the head-dress of the Corn god. This conception is seen in the codices and also on the frescoes at San Rita in British Honduras,[1] where similarly placed knots and offerings are found.

The figure at the left is seated on a throne and holds in his hands a standard like those in the upper panel. Over his shoulders is a short cloak decorated with star-symbols. The head-dress contains many small loops, which are repeated again on the base of the standard.

The frescoes described are on the north half of the western façade. It seems probable that they once continued around all four sides of the building, but to-day there remain only those we have seen and two figures on the west end of the north wall, which are shown on figure 27. Although the black paint of the outlines is quite distinct, the blue paint has totally disappeared. The upper figure appears to be an aged divinity with bent back, who carries the usual standard. Beneath this deity are traces of a large bowl containing offerings and various floral forms.

FIG. 27.—Mural paintings on the north wall of Temple of the Diving God, Tulum.

[1] Gann, 1901, plate 30.

The divinity in the lower panel is god E, the Corn god, who is recognized by the conventionalized ear of corn sprouting from the top of his head and by his youthful face. In the Old Empire sculpture he is represented as an idealized youth, and his likeness has come down to us in some of the most beautiful art of the period. At that time he appears to have occupied an unimportant place in the Pantheon. In the codices, god E is quite common, especially in the Madrid manuscript, but can not be considered a deity of prime importance. Schellhas[1] states that he is the god of husbandry, of life, of prosperity, and of fruitfulness. Symbols of death never occur with him. He may be tentatively identified with the name Yum Kaax, "Lord of the Harvest Fields." The day-sign Kan is frequently associated with him, appearing on his head on sacred objects associated with him. In the mural paintings at Tulum, god E is the dominant personage. Not only do we find the god himself constantly represented, but his attributes are often attached to other divinities, as we shall see, and his symbols, especially the standard with his head-dress, occur everywhere. In the instance on figure 27, god E is shown walking with a standard in his hands, on which is a kin sign at the bottom and his own head-dress at the top. This presentation is similar to that on the north corridor of the Temple of the Frescoes (plate 8).

Temple of the Frescoes.—The most extensive mural paintings at Tulum are on structure 16 (fig. 70), which has been called the Temple of the Frescoes. Several periods of growth of this building have resulted in inclosing three sides of the original edifice in a colonnaded passage. The three walls to the height of the upper molding were covered with mural paintings, the greater part of which are still partially preserved. Plate 7 shows the entire inner wall of the west passage, which once was the west façade of the original building, and also the doorway which leads to the inner room. The paintings display five rows of figures which are designated on plate 7 by the letters A–E and F–J on the two sides. The upper rows (A and F) show a series of deities between the two moldings, which are themselves painted with a line of chevrons and rosettes. The next six rows (B–D and G–I) also contain various divinities and are divided into panels by the bodies of conventionalized intertwined serpents. At the bottom are several fishes.

We shall start our description of the paintings at the right end of row A, at the edge of the niche containing the sculptured Diving god, and work to the left. The first motive encountered is shaped like an inverted U. It is adorned with an elaborate knot on one side and a rosette on the other side, together with small scrolls. The right end terminates in the form we have seen on the head-dress of the Corn god and which represents the growing ear of corn. The subject is then a cornstalk bent double, with an ear of corn at the end.

The second figure from the right end of the line is probably god K, who has a mouth with fangs like god B and a long nose which turns upward and, in this case, terminates in a flower. We have already said that these divinities are closely associated not only in appearance but in attributes and may represent different phases of the same god. Schellhas[2] argues that god K in the codices has an

[1] Peabody Museum Papers, vol. IV, No. 1, pp. 24–25. [2] *Ibid.*, pp. 34–35.

LOTHROP

Frescoes in the West Passage, Temple of the Frescoes, Tulum. Height: 8 feet.

astronomical significance from his association with god C, but his primary function is evidently in connection with rain and therefore agricultural. On the frescoes his association with the Corn god and corn symbols emphasizes his connection with agriculture.

The third figure from the right end of row A is a young goddess who kneels in front of a metate (mealing-stone) and holds a mano (hand-stone) in one hand. On her head is an elaborate head-dress with plumes, and she wears a sleeveless blouse and a skirt reaching to the ankles. The metate rests on an animal head, a form which is not common in the Maya area, but is typical of the Pacific coast of Nicaragua and northern Costa Rica. This figure at present is without a parallel in Maya art. In three instances in Mexican codices,[1] however, there is repre-

FIG. 28.—*a*, jar surmounted by Kan signs and ear of corn, Madrid codex; *b*, dancing figures, Dresden codex; *c*, dancing figures, Codex Vaticanus B.

sented an old woman in a white robe who kneels in front of a metate and holds a mano broken in two pieces, from which blood flows. She is associated in these pictures with Xochiquetzal, the young and beautiful goddess of flowers and craftsmanship, the wife of Tlaloc, whom Tezcatlipica stole and placed in the ninth heaven as goddess of Love. Seler calls this old woman Ilametecutli, the wife of Iztac Mixcoatl, who dwelt with her husband in the seven caves, the land of the forefathers. The Mayan figure does not agree too exactly with the Mexican divinity, for she is evidently not old. However, although her mano is not broken, the tassels on it are not unlike the spurts of blood which issue from the Mexican mano.

In the center of row A are two intertwined serpents. The head on the right, which is the better preserved, exhibits wide-open jaws with two flowers growing from the snout in the same manner as on the figure of god K at the right end of the panel. Above the junction of the jaws rise two loops, which probably represent incense, and above are twin ears of corn. The whole design may denote the serpent, the symbol of rain, bearing offering to the Corn god.

To the left of the twin serpents is a deep jar with lumps of incense in which is planted an ear of corn. This is a subject of which we have already seen half-effaced examples on the walls of the Castillo and the Temple of the Diving God.

[1] Codex Borgia, 9; Codex Vaticanus B, 28, 94.

Figure 28, *a*, is from the Madrid codex and brings out several additional points. The base on which the vessel rests is clearly a coiled serpent, a conventionalized portrayal of which is seen in the Tulum example. The top of the jar exhibits in the manuscripts two Kan signs, the hieroglyph of the day associated with the Corn god, which have retained their outline but have lost their significance in the mural paintings. The general conception here evidently is incense, for actual masses of incense thus piled up may be seen in museums, and the subject is sometimes modeled in clay. (See plate 10, *m*.) The ear of corn in both mural paintings and manuscripts is usually given an eye and assumes the likeness of a serpent head, thus again emphasizing the symbolical association of corn and rain. There is obviously a close connection between the jar containing offerings and the standard carried by many of the deities. This "standard" may be a jar with pendent streamers and the usual offerings on top. The fact that there is usually a kin-sign towards the bottom of the standard, however, makes it appear that more than a jar is involved.

The deity at the left end of row A apparently is one who does not exist in the codices. She may be designated the Knot goddess, from the fact that her head-dress embodies a knot (which also occurs with other divinities) and because her nose consists of a series of loops. The symbolical significance of the knot is far from clear, although it is evidently connected with the serpent and therefore probably with rain. At Tulum knots are seen in great numbers on the panel-borders of the frescoes on this building and elsewhere. They also occur on bowls of offerings. In stucco relief they are associated with the Diving god (structure 25, plate 23). In the Madrid codex they are seen with god C, the North Star god, and god D, probably Itzamna, and also with offerings. On the Santa Rita frescoes, knots occur on head-dresses and loin-cloths, and there is an interesting example of serpents in the form of a loose knot which covers a figure of god D. On the Old Empire stelæ, knots are seen on head-dresses and loin-cloths at practically every site.

Panel B, the panel directly under the lower molding on the left half of the façade, is outlined by the conventionalized bodies of serpents from which grow small plants. Mr. O. F. Cook, of the Bureau of Plant Industry, has kindly informed me that the pods are either *hymenia*, or cacao beans, and the small plant at the lower right-hand corner of the panel is probably *dorstenia*, a member of the fig family. The deity at the right end of the panel apparently is god B, who wears a head-dress formed of god K's head crowned by the corn-symbol. Both these heads somewhat resemble the Mexican Eecatl, God of the Winds. In front of the deity is a staff which he holds in his hands. Across his body is a slanting object marked as a constellation-band, which resembles the Ceremonial Bar of Old Empire sculpture, though it can not be positively identified, owing to the obliteration of the ends. Beneath this and behind the heels of the deity is a glyph, probably a tun (360-day period) sign.

The central figure in panel B is god D, who wears a head-dress of incense capped by two ears of corn. He bears in his hand the standard of which we have

Frescoes in the north passage, Temple of the Frescoes, Tulum.
Height: 21 inches.

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seen several examples. Facing this figure is another representation of god D, who here wears a different head-dress and costume. In his hand he carries a serpent, a subject which is also found in the codices.

Row C is divided into two panels by the serpent-bodies. The right-hand panel is occupied by a female figure who carries in either arm a miniature figure of god B. She wears the usual woman's costume and an elaborate head-dress. The two likenesses of god B carried in the hands recall the fact that the Manikin Scepter carried in the hands in Old Empire sculpture always has a face or image of this long-nosed deity at the upper end.

At the right end of the left-hand panel in row C is a jar with incense surmounted by corn. The central figure, which I can not identify with certainty, carries a standard in his hand and wears a head-dress containing the usual corn symbol. The most interesting feature, however, is that the god apparently sits on the back of an animal. It will be recalled that at Palenque several stucco bas-reliefs show personages seated on thrones formed of a tiger head and legs. This animal on the frescoes, however, does not appear to be a stationary throne, but actually seems to be alive and walking.

In the lower left-hand corner is a small picture of a lady who dances with flowers in her hand. She probably is a human being who dances for the delectation of or in devotion to the gods. In Old Empire sculpture two dancing figures are seen on the badly battered stela at Motul de San Jose and there is a single dancer on stela C at Quirigua. They are also found in the Dresden, Ferjervary-Mayer, Vaticanus B, and Borgia codices and on the frescoes at Santa Rita (fig. 28, *b* and *c*). The subject is one of which we have little actual knowledge apart from these various representations, but from the presence of dancing figures in religious scenes it is evident that the dance was considered an important adjunct of religion.

Row D contains two figures facing a jar which contains incense and flowers. The right-hand figure is an old woman with a face which resembles that of god D. Her head-dress contains a corn-symbol and a knife, and in her hands she carries a serpent-headed staff. God D once appears as a woman in the Dresden codex. The divinity at the left end of the panel is too faintly represented to be recognized. The bottom panels (E and J) both contained representations of fishes. This arrangement is also found on the Santa Rita frescoes and in certain Mexican codices.

Turning now to the right half of plate 8, we find that there is little left of the painting which once adorned this part of the wall. The general arrangement, however, seems to have been like that of the other side, although the details were obviously different. The upper panel (F) runs between the moldings and corresponds to panel A on the other side. The figure at the left end is probably god K, although this can not be stated with any certainty. Whoever it may be, he bears in his hands a Manikin Scepter capped by an image of the Corn god. The significance of this object we have already discussed. The next figure is a serene-faced goddess who turns, with outstretched hands, towards the deity with the Manikin Scepter. The third divinity from the left end of the panel is probably god B wearing

a head-dress with corn-symbols and apparently carrying a shield and spear. The rest of the painting is too badly weathered to be intelligible, except that near the right end is a seated figure which may be god D.

The next panel below (G) contains two indistinct divinities, both of which are seated on a throne. The one on the right holds a staff in his hands. The next two

FIG. 29.—Fragments of incense-burners, eastern Yucatan or British Honduras. Height of *c*, 18.5 inches. Courtesy of Peabody Museum, Harvard University.

panels are totally blank, save for a fragmentary imprint of the Red Hand, other examples of which are seen in this building. The significance of this widely distributed symbol still remains a mystery, in spite of much speculation. At the bottom row (J) is part of a fish with a grotesque head, behind which rises a fin.

The central column in the doorway is adorned at the top with a constellation-band, which may be compared to that on the outer wall of the Temple of the Diving God; beneath is a panel containing a deity with a head-dress which embodies a serpent-head and the corn-symbol. The sides of the doorway also are decorated with mural paintings, as may be seen in figure 71, B.

The north corridor is painted for only a short distance on the inner wall, just around the corner from the left edge of plate 7. One of the figures[1] from the north

[1] This figure was copied by Dr. Gann in 1916 and by Mr. Morley in 1922. The two copies differed considerably and the writer has reconciled them as much as possible with the aid of a photograph.

a, *f*, stucco ornaments, Tulum. *g*, *j*, part of an incense-burner, Mugeres Island. *h*, *i*, *k*, *l*, pottery fragments, Cozumel. Length of *a*, 7 inches; length of *g*, 11 inches. Courtesy of Peabody Museum, Harvard University.

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corridor is shown on plate 8. The wall here is again divided into panels by conventionalized intertwined serpents. The deity represented is clearly the Corn god with his usual head-dress, who bears in his hands a standard topped by the corn-symbol.

FIG. 30.—Pottery fragments, Tulum. Length of *m*, 6 inches.
Courtesy of Peabody Museum, Harvard University.

The south corridor of the Temple of the Frescoes contained mural paintings along the entire north wall. A large part of these could be recovered with time, patience, and the proper equipment.

CERAMICS.

The most striking pottery remains from the east coast are large incense-burners. They are made of a coarse, friable clay liberally mixed with sand, and they vary in color from light buff to dark brown, with the exception of a few pieces

which have come in contact with salt water and have turned dark red. In shape these vessels were either cylindrical or cup-shaped, with an annular base. They vary in height from a few inches to over a foot. The decoration consists of a complete figure or a face on the outer wall of the vessel. Of complete figures no example was found, but the common form probably resembled the specimen shown on figure 29, *c*. A piece representing a deity with the head of a leaf-nosed bat is illustrated on figure 29, *b*. Other and less complete pottery specimens are

FIG. 31.—Incense-burners (?), vicinity of Tulum. Height of central specimen, 7.5 inches. Courtesy of the Peabody Museum, Harvard University.

shown on plates 9 and 10. Of these, one of the most noteworthy is plate 10, *g*, which was found by Le Plongeon in front of the chief temple on Mugeres Island. It is of uncommonly fine clay and finish, and the features are modeled with considerable feeling for the bony structure of the skull. The teeth are filed into sharp points, a custom which does not appear to have been universal, for other heads exhibit unmutilated teeth. The legs illustrated beneath this specimen were found with it, but the rest of the figure was destroyed in the process of excavation. The other pieces on plate 10 all came from Tulum and Cozumel and are not so well executed.

From the ruins of Tulum very fragmentary pieces only were secured, of which a series is given on figure 30. The bottom row is made up of fragments of bodies and limbs, while pieces of head-dresses are seen above. Plate 10, *d*, is part of a large head, of which a few pieces were picked up at the foot of the Castillo stairway. From the location of these fragments and the size of the head it is not improbable

a, *b*, heads found near Tulum; *d*, *h*, Tulum ruins; others, Cozumel. Length of *b*, 6.5 inches; length of *k*, 9 inches. Courtesy of Peabody Museum, Harvard University.

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that this may be part of the chief idol of the city, which had been cast down the Castillo steps and shattered. Plate 10, *h*, was found at Tulum in the tomb in the north end of structure 22. It is well modeled and appears to have been once painted red.

A second and very much coarser ware is represented by several pieces brought to us by the Tulum chief who dug them up on his *milpa* some miles inland. Two heads thus obtained are shown on plate 10, *a* and *b*. The former is marked by a high, thin nose, projecting lips, and a head-dress formed by a jaguar's head. The other head (*b*) is of finer clay and was once covered all over with plaster, traces of which still remain.

Figure 31 shows a different type, on the sides of which faces are indicated by ribbons of clay, which, in two cases, are capped by a projecting animal head. An example of similar form from Cozumel is given on figure 29, *b*. The projection below the mouth of this piece represents lumps of incense, of which a mass carried in the hand is seen on plate 10, *m*.

The class of pottery described is found on the coast-line of the Maya habitat from Tabasco around Yucatan and across Honduras as far as Tela. The forms illustrated were probably all made not long before the Conquest, and the pieces on figure 31 may well be post-Conquest, for they closely resemble the handiwork of the modern Lacandones. However, incense-burners of associated type were made by the Maya of the Old Empire, probably as early as 9.14.0.0.0 (452 A.D.). We are dealing, then, with a specialized class of pottery which has a long history and which further study should enable us to arrange chronologically.

Ceramic remains other than incense-burners have not been found in large numbers on the east coast. Figure 30 shows fragments of vessels with tripod legs (*a* and *d*), globular jars with flaring rims (*e*), and large jars with loop handles (*h*). All these are made of the same coarse clay as the incense-burners, but with less admixture of sand. Figure 30, *j*, is a piece of a jar with a red slip. The incised design was applied after firing.

CHAPTER IV.

TULUM.

HISTORY OF THE SITE.

The most imposing ruins yet discovered on the east coast of Yucatan and the largest in extent are those of Tulum. In the time of its gentility it must indeed have been an impressive sight, and one can well believe that the city of Juan Diaz, than which "Seville would not have seemed more considerable nor better," was none other than Tulum. It is indeed strange that the Spanish records are silent on the conquest of this fortress, but such is the case. In fact, there is only one record of a city on the coast which might be Tulum, written between the days of Juan Diaz (1518) and the American traveler Stephens (1842). This account was written in 1579 by Juan de Reigosa, the tutor of Juan Martin, the son of the Conquistador Diego Martin, to describe the native town of Zama (Çama), and is preserved in the *Relaciones de Yucatan*.[1] This town was on the coast, 20 leagues from Valladolid, 14 leagues from Ascencion Bay, 2 leagues from the Muyil River, and 18 leagues from Cozumel. Tulum is the only major town in the area thus delimited, and the identification is made more certain by the fact that a dry stone wall is said to have surrounded Zama. The full account runs:

"The said town is situated at an elevation of eighteen and a half degrees (north latitude) on the coast which runs north east–south west, and the sea beats on the dry stone wall and edifices of the said town erected in ancient times, and there are several lofty hills which the Indians made by hand which they call *cue* in the tongue of the Indians. Among them is one which is larger than all the others and made in the manner of a fortress with corners of well worked stone, and the natives who are (still) alive can give no explanation as to who built them nor for what reason. From this port to the island of Cozumel is eighteen leagues . . . . It is fourteen leagues from the said town and port of Cama to the south west to a part which is called Ascension Bay."

The discoverer of the ruins of Tulum in the nineteenth century was Juan José Galvez. He published no account of his journey, but his impressions are preserved in a letter written by Juan Pio Perez in 1840, which reads:

"Old don Juan José Galvez . . . ., a person who visited this coast of the Ascencion (bay), asserts that between this port and the cape (Catoche) there are two ancient cities called *Tulun* (sic) and *Tancah:* the former has a wall running to the sea a quarter of a league or more in length and eight yards wide with a ridge or kind of coffer in which it terminates, all made without mortar and utilizing the stones from the coast which have been squared by nature, for the sake of greater strength and durability; and this is true of all the other sides except one. This place has marvellous and numerous features, it includes statues within it and other curiosities, which all go to show that this was once an important city and strong for defense against any attacks it might suffer from the sea. The (ruins) of *Tancah* are not so interesting and they are not unusual. . . ."

Although discovered previously in recent times by Galvez, the ruins of Tulum were first made known to the world by the writings of Stephens and the drawings of Catherwood, who visited the city together in the year 1842. Soon afterwards the

[1] P. 196 *et seq.*

terrible War of the Castes broke out and further investigation of the site was impossible until the last decade. This complete isolation has invested Tulum with a romantic atmosphere such as is enjoyed by no other Maya city.

In 1895, Mr. W. H. Holmes, on the yacht *Ituna*, approached the ruins closely enough to make two excellent sketches, but was deterred from landing for fear of attack by the Indians. In 1911, Messrs. George P. Howe and William D. Parmelee reached Tulum in a small sailing-vessel from Cozumel and spent parts of two days there, finally leaving in face of what appeared to be an impending attack by the Indians. In 1913, S. G. Morley and J. L. Nusbaum reached the city by the route followed by Howe and spent a few hours ashore. The first Carnegie Institution expedition to Tulum sailed from Belize in 1916 and was followed by a second party in 1918. In 1920, Prince William of Sweden spent some time at the ruins, and in 1922 a final Carnegie Institution expedition completed the surveys which had been started previously.

The aboriginal name of the ruins was Zama, according to Reigosa. It probably is a corrupt form of Zamal, "tomorrow," an apparently unsuitable name for a city. However, in several compounds it is given the meaning of "dawn," a conception entirely appropriate for a city built on a cliff which faces the dawn, the east, and the rising sun. Zama was, then, the "City of the Dawn."

The word *tulum* means "Wall, fortress, entrenchment," according to Pio Perez,[1] Brasseur de Bourbourg,[2] and Brinton.[3] It is not found in the older manuscript dictionaries, such as the Motul or San Francisco, but in the former appears the word *tulumche* (a *tulum* or fortress of *che* or wood), meaning a palisaded inclosure. Another Maya word for fortress is *paa*. "The distinction between *paa* and *tulum*," writes Brinton, "appears to be that *tulum* is an inclosure surrounded by a defensive wall, and this wall itself; while *paa* is a castle, or, in Maya land, a mound or pyramid with buildings on it erected for purposes of defense." The word *tulum* is admirably applicable to the ruins we shall describe.

A word must be said in regard to the spelling of this name. "Tuloom," used by Stephens, is evidently an anglicized spelling of the word as pronounced in Maya. "Tuluum," preferred by Mr. S. G. Morley, is based on an etymology we do not accept and is found in none of the many dictionaries which have been consulted.[4] The spelling Tulum is accepted by Maudslay, Joyce, Gann, and the writer.

GENERAL DESCRIPTION OF TULUM.

The ruins of Tulum stand on the summit of a limestone cliff some 40 feet high, which faces on the Caribbean Sea. The land slopes gently away from the cliff and then rises again, forming a ridge about 600 feet from the shore. Beyond this ridge the land falls again, forming an undulating plain which extends an unknown distance into the interior.

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[1] Diccionario de la lengua Maya. Merida de Yucatan, 1866–1877.

[2] See vocabularies in Brasseur's edition of de Landa.

[3] 1882, vocabulary.

[4] Morley (1917) writes: "The spelling 'Tuluum' is to be preferred on etymological grounds . . . . Luum in Maya means 'land' or 'earth'; and tu 'in' or 'to' with the possessive pronoun of the third person. Tuluum may mean 'in his or its land,' a not inappropriate name for a coast city." As stated above, this word does not occur in any of the dictionaries, the nearest approach to it being *tulluum*, "full of mud," in the Pio Perez.

The central portion of the ruin is inclosed by a great wall about 15 or 20 feet in height and thickness. This wall follows the ridge we have described for 1,266 feet and is connected with the cliff by arms roughly 550 feet long, thus forming a rectangle. From the southwestern angle of the Great Wall a lower wall runs diagonally to the sea, forming a triangular inclosure. The Great Wall is pierced by five narrow gateways, and small temples stand on its inland corners.

On the summit of the cliff, midway between the arms of the Great Wall, stands the principal edifice of the city, the Castillo, which is visible for many miles at sea and is in fact a landmark on all charts of the Yucatan coast. The relation of the Castillo to the shore-line is seen on plate 11, where B is a view looking northward from the Castillo itself. In the middle distance is a small temple (No. 45) on the edge of the cliff. Beyond is the north arm of the Great Wall and the roof of the Cenote House, behind which is a hill sloping sharply to the sea, concealing

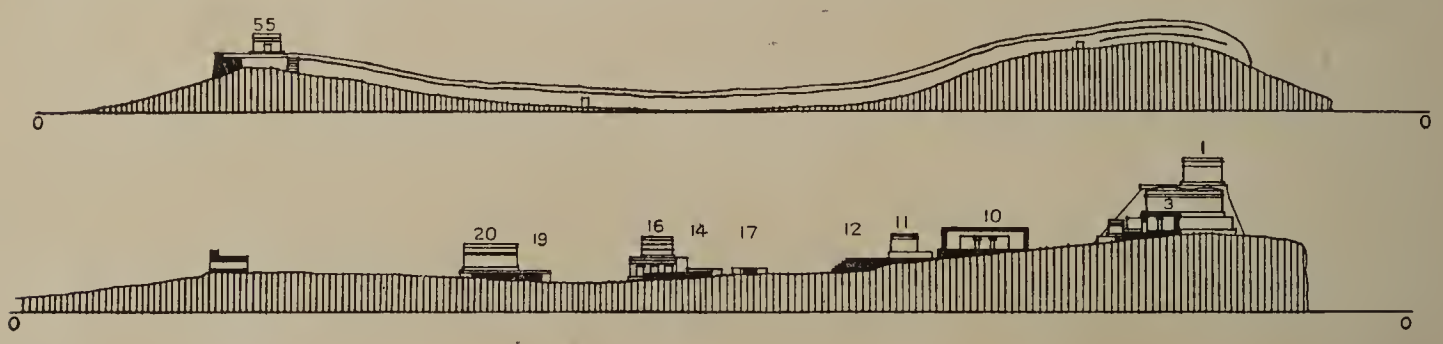

FIG. 32.—Cross-sections of the ruins of Tulum.

temples 55 and 56. Still farther away is a sandy beach running out to a point, beyond which are the ruins of Tancah. The other picture (A) shows the southern view from temple 45. Across the cove is the Castillo and on the coast beyond is temple 54. The Great Wall is concealed by trees; it approaches the cliff just beyond the point below temple 54. In the distance is a sandy beach which runs down to Tulum Playa. A view of the cliff and beach behind the Castillo is seen on plate 12, A.

The entire area described may well have been included within Tulum in the days of its glory. Not that there were contiguous houses for this extent of 5 or 6 miles, but there probably were no large open spaces anywhere. The distance that the city extended from the sea was slight, perhaps not more than a quarter of a mile. To Juan Diaz, then, sailing along the foot of the cliff and unable to see inland, the city appeared larger than in reality it was.

Returning to our consideration of the Castillo, this three-tiered edifice faces the land (plate 15), exposing to the sea the fortress-like face seen on plate 12, B. It

54 1 3 4 5 16 21 20 25

5 4 35 45

Tulum. A, looking south from temple 45; B, looking north from the Castillo.

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is flanked by two small temples, with which it forms one side of a court which we have called the Inner Inclosure. On the other sides of the Inner Inclosure are seven smaller buildings connected by a wall. This wall is pierced by three passages, two of which were vaulted. In addition, there were two narrow gaps between buildings, making a total of five openings. The other buildings which with the Castillo form the Inner Inclosure are all small and with a single exception consist of one room. One of them, however (plate 20, B), is among the best-preserved structures in the city and is still decorated with frescoes. In another (temple 9) were found the fragments of stela 1.

The massive bulk of the Great Wall proclaims that its function was largely military. The Inner Inclosure, however, appears to have been a religious compound, for the character of the buildings which form it is apparently religious and the nature of the walls is such that they would not well serve for defense. It is to be noted, however, that the walls are heavier on the north, where they overlook a small beach and cove, offering admirable protection for repelling a landing force.

Fifty yards west of the Inner Inclosure one crosses a long street which runs north and south between gateways in the corresponding arms of the Great Wall (plate 22, B). This was the fashionable street of Tulum, on which were congregated the residences of the nobility. Here may be seen five large edifices of stone, as well as many platform mounds on which may have stood houses of more perishable materials. Four of the stone structures are of the type known as palaces. Their doorways are wide and divided by several columns. Within are two long, narrow rooms with smaller rooms on one end. In the center of the back room is a small sanctuary or shrine, showing that even in his home the Maya noble was unable to escape the all-pervading influence of religion. The roofs of these buildings were of wooden beams overlain with rubble, and all have fallen, owing to the decay of the wood. The fifth stone edifice (16) was originally a small rectangular temple. About three sides of this was built a colonnade, within which are frescoes, while a second story was built above.

In the northeastern corner of the inner city is a building known as the Cenote House. Its foundations rest on a natural limestone arch which roofs over a cenote or well, the only water-supply in the center of the city, to-day brackish and filled with bat-dung. Near this building, on the coast, is a small temple (45), which stands on a round substructure with vertical sides. Near by are six small shrines, none of them more than 4 feet high.

In the southwest corner of the city is a small temple (54) with several platform mounds in close proximity. The view northward from this building is shown on plate 12, A.

Outside the Great Wall to the north are two small temples which are visible from the sea (57 and 58). Beyond the Great Wall in every direction are traces of low walls which perhaps once marked the boundaries of land. They formed a network wherever we went. To the west the land becomes practically a swamp, beyond which is *tierra incognita*, where dwell the present Tulum Indians, who do not welcome white men in their abodes.

THE GREAT WALL.

The most interesting and unusual feature of Tulum is the stone wall which encompasses the principal edifices. This wall forms three sides of a rectangle, the fourth side of which is the cliff overhanging the sea. The total length of the wall is 2,352 feet. Its average width is about 20 feet and its average height is 10 to 15 feet. A second and smaller wall, 1,240 feet long, 11 feet wide, and 6 feet high, runs diagonally from the southwest corner of the Great Wall to the sea, inclosing a triangular space. The total length of the two walls is nearly 3,600 feet.

Although traces of fortifications are not common to-day, it is probable that most Maya cities were fortified in the sixteenth century. This must have been an absolute necessity in order to survive, for all parts of the Maya area were more or less embroiled at the time of the Conquest. In the great cities of the Guatemalan highlands advantage was taken of naturally defended positions, which were further strengthened by artificial means. Utatlan, the Quiche capital, was partly built on a level plain surrounded by deep *barrancas*, precipitous ravines eroded in Recent

FIG. 33.—Northeastern end of the Great Wall, Tulum.

volcanic ash. The only access to this "island" was a narrow neck of land which was stoutly fortified and is said to have been artificial. Alvarado wrote to Cortes: "This city is very strong, and there are only two ways of entering it, one over thirty stone steps, and the other by a causeway made by hand."

The Cakchiquel capital, Iximche, was built on a long tongue of land projecting into a deep *barranca*. The sides of this peninsula were terraced for defensive purposes. The neck connecting it with the main plateau is cut by a deep ditch, above which stand walls, to-day covered with vegetation, but once probably faced with cut stone. The ruins of Tenampua, in the Comayagua Valley in central Honduras, stand on a large plateau which Squier estimated to be 1,600 feet above the valley-floor. In most places this plateau ends in an abrupt drop, but where there are ridges running to neighboring hills the inhabitants erected walls of stone. According to an unpublished survey made in 1917 by the writer for the Peabody Museum of Harvard University, the principal stretches of wall are 1,020, 500, and

Tulum. A, looking north from temple 54.

Tulum. B, east front of the Castillo.

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150 feet long. These walls, like the Tulum wall, were made of stones without mortar and, although not so massive, they afforded equal, if not greater, protection, owing to the nature of the ground. Squier called Tenampua the most impregnable aboriginal stronghold in America, an opinion in which the writer concurs.

In Yucatan all the important cities seem to have been fortified. Traces of the stone wall surrounding Mayapan were still visible at the time of Stephens's visit.[1] At Chacchob there is said to have been a stone wall 2,400 yards long and 2 to 6 yards high, which outlined a space shaped like a Greek amphitheater and inclosed many ruined buildings.[2] Tulum and Xelha are the only other sites in Yucatan now known with stone walls. Judging from the accounts of the Conquest, however, many others must have existed.

A perhaps more usual form of defense than the stone wall was the wooden palisade. This is constantly mentioned in the early descriptions of the country, and

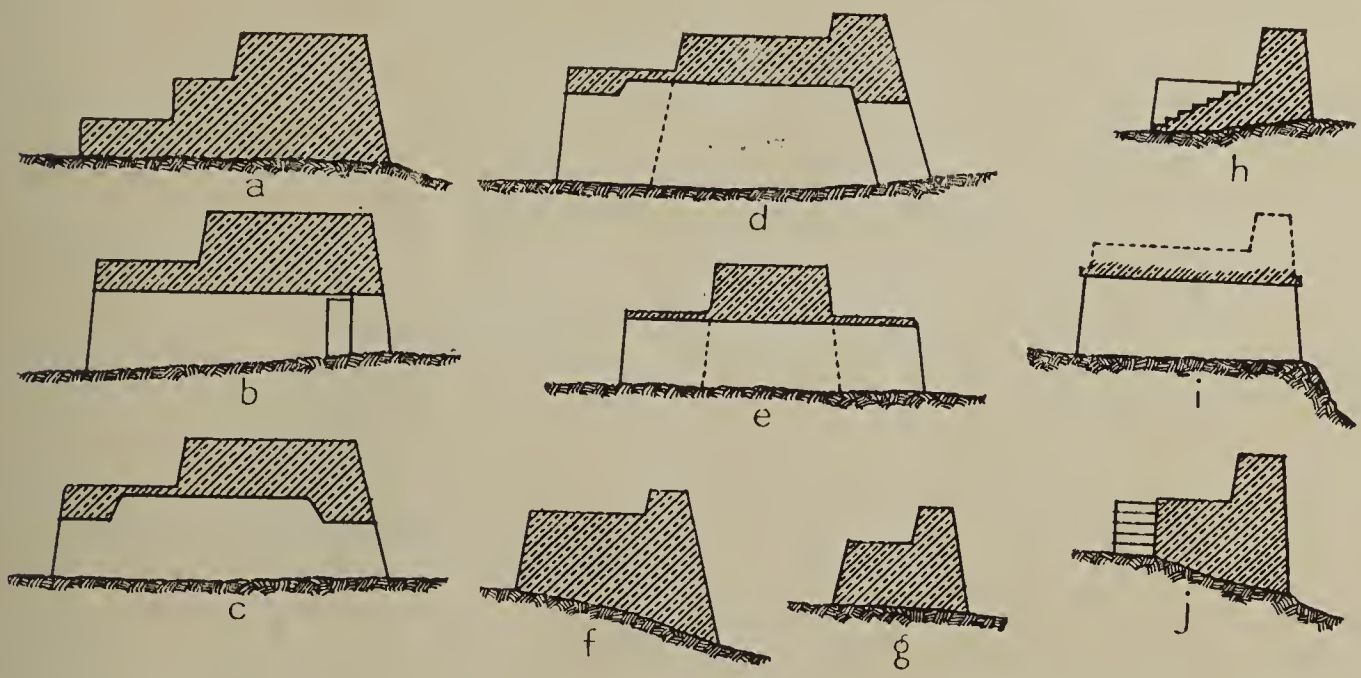

FIG. 34.—Cross-sections of the Great Wall, Tulum: *a-c*, north arm; *d*, *e*, south arm; *f-j*, west arm.

the native word, tulumche, is preserved in the sixteenth century Motul dictionary. These barricades may have been strengthened by loose stone piled around the base. An attack on a walled city and the towers and ladders used for this purpose are represented in one of the scenes of the frescoes on the Temple of the Tigers at Chichen Itza.

Outside the Maya area fortifications are widely distributed throughout the Americas. Several examples in Mexico are known, of which the fortified hilltop at Mitla is a conspicuous example. In the southwestern United States the large pueblo of Pecos is surrounded by a dry stone wall, and numerous earthworks of a military nature have been noted in the Mississippi basin. Similarly fortified sites occur throughout the Andean region in South America, of which the best known is Sacsahuaman, near Cuzco, in Peru, probably at once the most massive and most scientifically constructed fortress in the New World.

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[1] 1843, vol. 1, p. 131. [2] Un Curioso in El Registro Yucateco, vol. 1, p. 206.

The Tulum wall is constructed of unshaped stones without mortar and has crumbled greatly, as would be expected, under the influence of tropical vegetation. The profiles of the north and south arms, figure 32, top and bottom, show that the height varies with the nature of the ground to be defended. The thickness also changes with the nature of the ground (plate 25). Cross-sections (fig. 38) reveal the fact that there are several periods of construction. The oldest period now forms the inner face of the wall and the broad esplanade above it; the outer face of the wall and the parapet are of later construction and at present are from 2 to 5

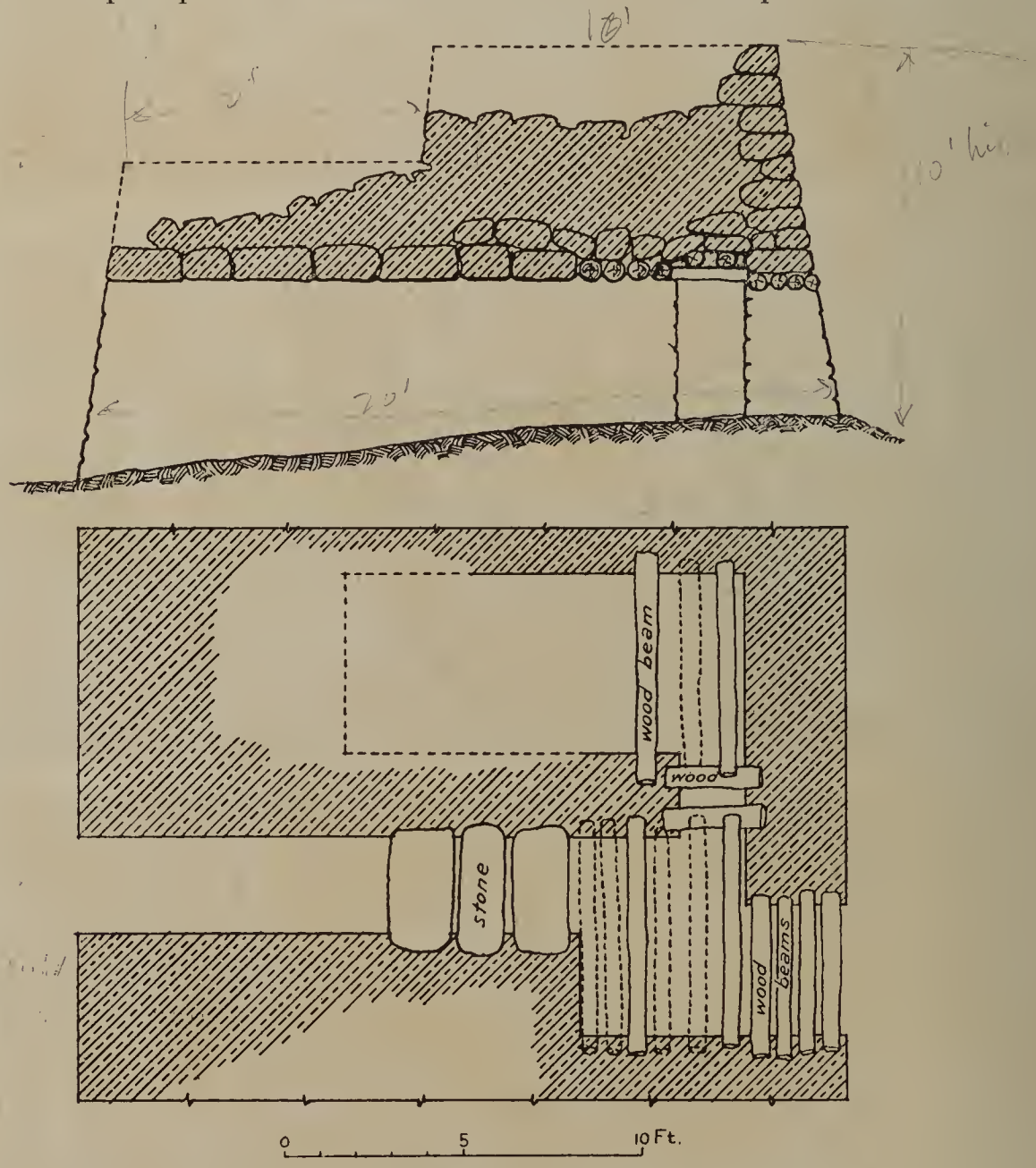

FIG. 35.—Plan of northeast passage in the Great Wall, Tulum.

feet higher than the esplanade. Plate 13 shows: (A) the exterior side of the wall, looking east from the northwest passage; (B) a view of the crest, looking south from the northwest corner. Both these photographs were taken after extensive clearing of the unusually prickly vegetation, which was necessary in order to obtain accurate measurements.

The north arm of the wall is 529 feet long. The seaward or eastern end terminates abruptly some 40 feet from the edge of the cliff, as may be seen in figure 33. We could discover no evidence that any part of the wall has fallen

The Great Wall, Tulum. A, north arm; B, west arm; C, room off the northwest passage.

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into the sea and therefore believe that this gap and the similar opening at the end of the south wall were closed with material of a perishable nature. The statement of Galvez, that the wall terminated in a "ridge or coffer," probably applies to the crest of the wall, but may describe some construction at the ends which had been obliterated before our visit. Cross-sections in the north arm were taken in three places (fig. 34). The first (*a*) is at the crest of the ridge overlooking the sea; it represents the only part of the wall rising in three tiers. The typical two-tiered section is seen at the two gateways (*b*, *c*).

The northeastern gateway (fig. 35) is the most interesting in the city. Entering from the outside, one passes through a narrow doorway with wooden lintels into a small rectangular room. On the west side of this room is an even narrower doorway giving access to a second room, now completely blocked by masonry, owing to the collapse of the wooden roof-timbers. In the south wall of the first

FIG. 36.—South side of the northwest passage in the Great Wall, Tulum.

room is a door leading to the inner face of the wall by means of a stone-lined passage 15 feet long, which emerges near the so-called Cenote House. A photograph of these two rooms, almost filled with crumbling masonry, is shown on plate 13, c. In the lower right-hand corner are the roof-beams over the exterior door. At the left is the stone-capped passage to the inner side. In the lower center is the first room described, beyond which is a small gap representing the doorway to the second room. The purpose of the two rooms in the thickness of the walls is open to speculation. Probably they served the guardians of the wall for storage of arms. They may also be of a defensive nature, as they would afford a vantage for cross-fire against those attempting to force the passage. A small room was noted in the Great Wall of Xelha, and others may have existed at Tulum which have been obliterated through collapse of the roof-beams.

The northwest passage (figs. 34, *c*, and 36) is a vaulted opening running directly through the wall. The wall is 24 feet thick at this point and 11 feet high. The door-lintel is a little over 4 feet high, while the interior is 7 feet high. This necessitates stooping when entering, while a defender has room to strike an overhead blow. The southwestern passage, which stands at the other end of the long main street from the one just described, has a similar opening.

On the summit of the Great Wall, at the northwest corner, is a small temple, one of the pair which Stephens described as guard-houses but which probably should be called temples. This edifice is reached by a flight of steps on the inner side of the wall. These were the only stairs observed in this arm of the wall, although others probably once existed. The temple is a rectangular building with doors on the south, east, and west and an altar against the north interior

FIG. 37.—Temple 55 and cross-section of north wall, Tulum.

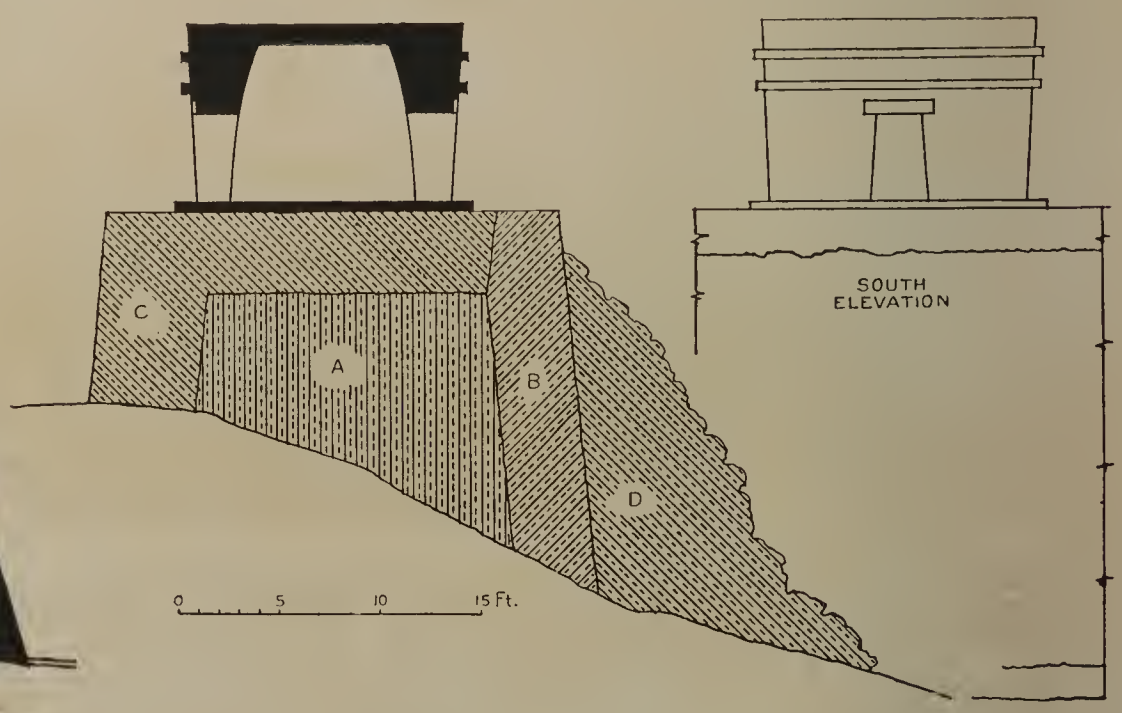
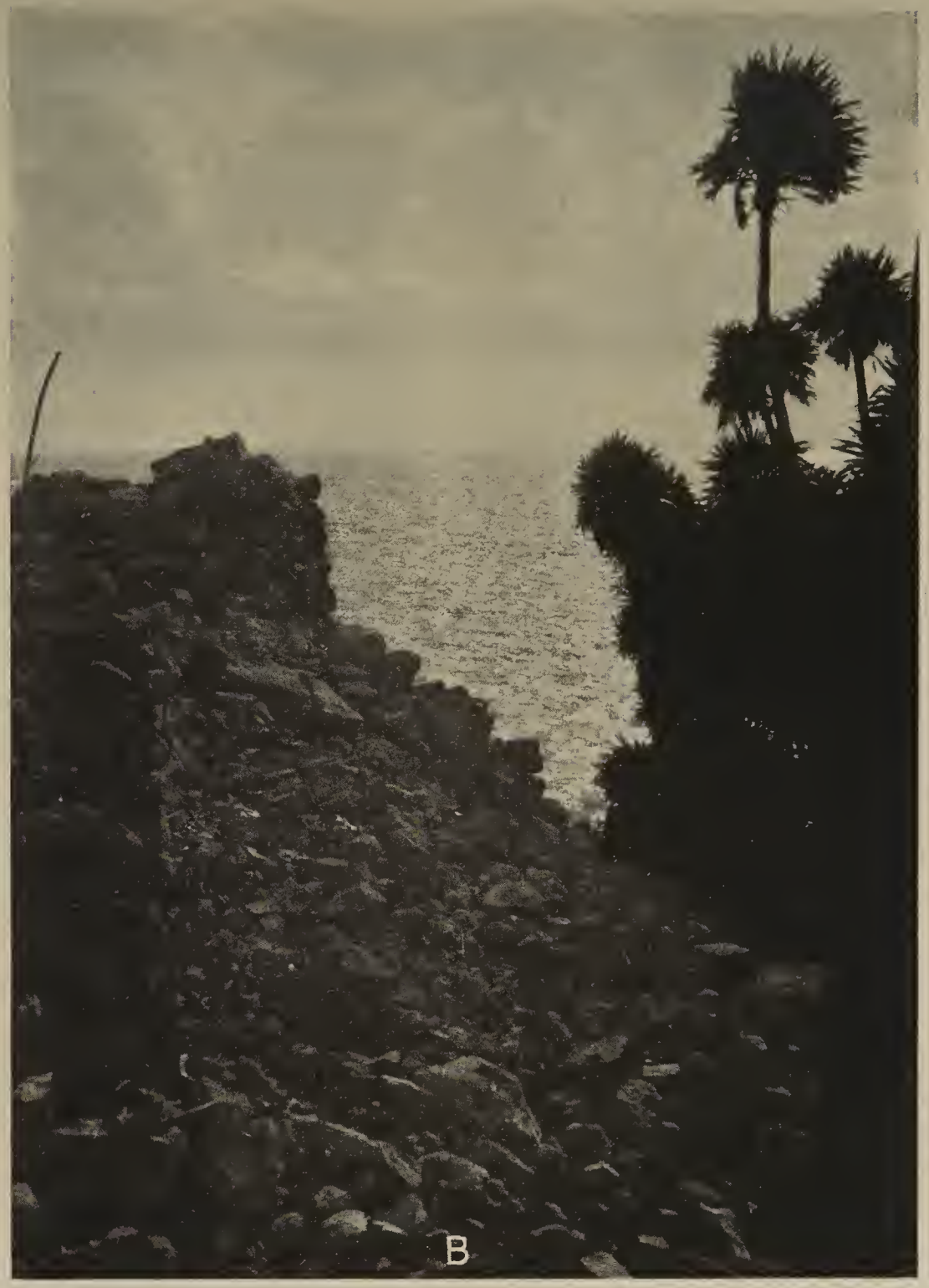


FIG. 38.—Cross-section of west wall and temple 56, Tulum.

wall. It was painted with frescoes on the outside and has a simple geometric frieze on the upper façade. It is more fully described below.

The west wall, which roughly parallels the sea, is 1,266 feet long. It follows a ridge which runs north and south about 200 yards from the coast. Plate 13, B, shows the crest as seen extending southward from the northwest corner. Beyond what can be seen here, the wall bulges to the west and then returns to the original line. On the inside of this bulge are three niches which contain dilapidated stairways. At the southern end of the bulge is the only gate in the west wall, the opening of which is partly blocked by fallen masonry, but which apparently has no special features. This opening is a little south of west from the Castillo. A cross-section of the city from the gate to the south end of the Castillo is shown on figure 32. The cross-sections of the west wall (fig. 34, *f-j*) are self-explanatory.

The southern half of the west wall has four staircases built in the interior side of the wall. Three of these stairs are built in pairs which come down to a common landing, as shown in figure 39.



The Great Wall, Tulum. A, southwest passage; B, southeast end.

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At the southwest corner is another temple (56) corresponding to the one already described (55), from which it differs chiefly in the absence of a frieze. It has doors on the south, east, and west and an altar against the north interior wall. This arrangement made it impossible to view the long arm of the wall from the interior of the building and furnished one of the reasons why we believe that these buildings were temples rather than guard-towers. A cross-section of the wall in figure 39 shows the elevation of this temple and also brings out the several periods of construction embraced in the wall. Figure 38, A is probably the original wall; it is roughly 6 feet high and 14 feet broad. On the outside of this was built a second and higher wall (B), which formed a parapet for wall A. Another construction, apparently independent of the others, is the platform on which

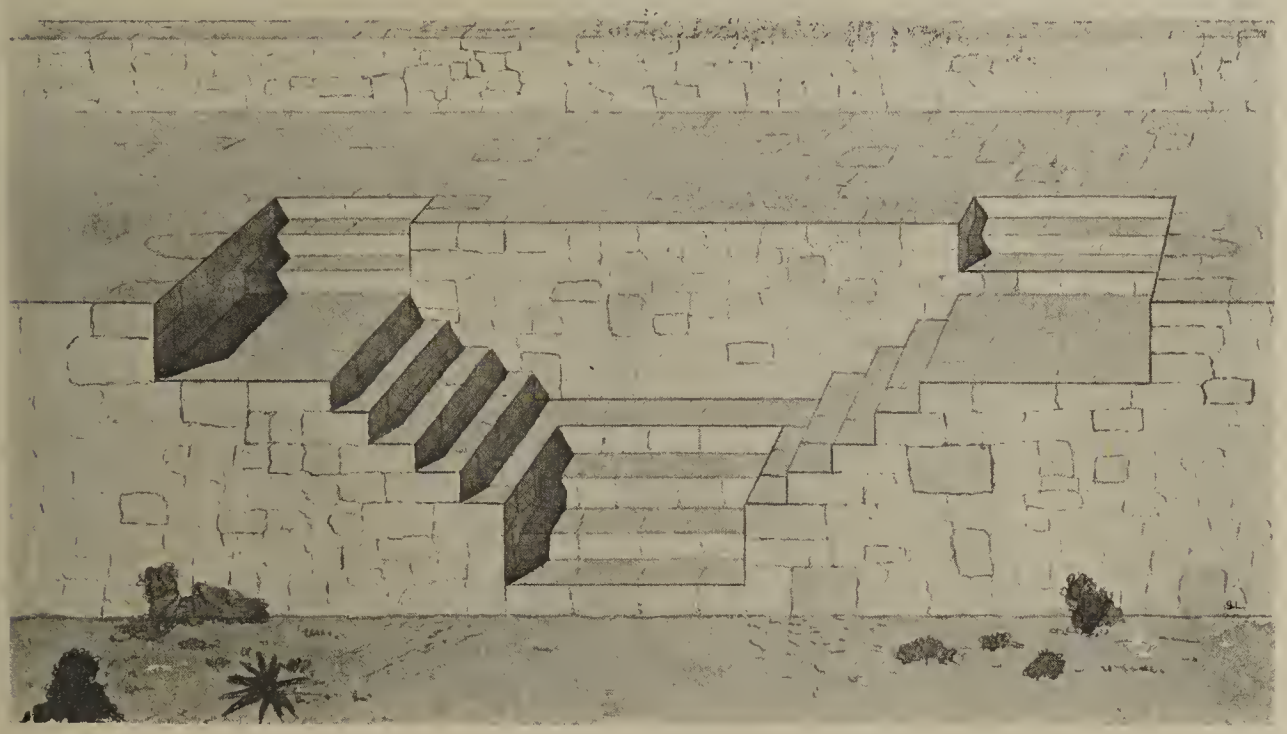


FIG. 39.—Stairway (restored) in the Great Wall, Tulum.

the temple stands (C). Finally, on the outside face of wall B there was built still another wall, D, now badly ruined, which probably served to prevent the other walls from bulging beneath the weight of the superimposed temple. The complexity of the construction at this corner is increased by the fact that it is here that the Lesser Wall (of which we shall speak presently) joins the Great Wall.

The south arm of the Great Wall is of more massive construction than the other sides, because in places the exterior faces rising ground. A hundred and thirty feet from the west end is a shallow niche of unknown use. Just before the western gateway itself is an offset which makes possible a cross-fire at the entrance. The passage itself is like the corresponding one in the north wall, except that on the inside it is prolonged beyond the inner line of the wall. A photograph of this projection is found on plate 14, A. Half-way between the two gates is a second offset

similar to that just described. The eastern gateway has fallen. It appears to have been prolonged beyond the face of the wall on both the inside and outside. On the west side of it are three double stairways and on the east are two more. The former are sunk in the wall, while the latter rest on buttresses built against the inner face of the wall.

The crest of the wall overlooking the sea is illustrated in plate 14, B. The vertical construction is the inner or the original wall, to the right of which is the débris of the outer wall or parapet. Like the north wall, the south wall terminates 40 feet from the sea, and again there is no evidence that it once extended farther. Why the inhabitants of the city erected this great mass of masonry and left two wide openings is a mystery to be explained, perhaps, by the discovery of what Galvez meant by the "ridge or coffer" in which he said the wall terminated at the time of his visit.

THE LESSER WALL.

The Lesser Wall commences at the southwestern corner of the Great Wall, the general line of which it continues for some distance. It then bends slightly to the west and then to the east, from which point it diagonally approaches the coast. The east end is 90 feet from the sea, so that we are again left cause for wonder why these huge walls were erected and large gaps left at the seaward ends. The total length is 1,240 feet.

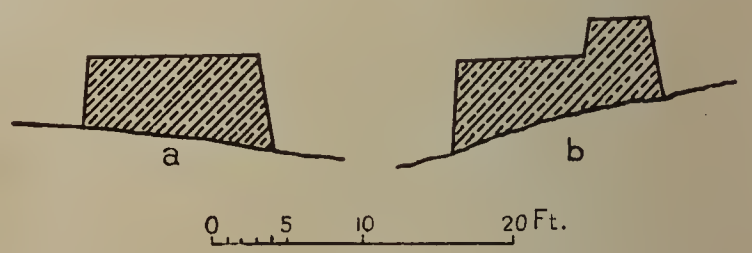


FIG. 40.—Cross-sections of Lesser Wall, Tulum: *a*, north end; *b*, central portion.

The construction of this wall is like that of the Great Wall, except that it is much smaller and the parapet is either absent or but slightly developed. The only opening is about 100 feet from the east end. It appears to have been made recently to accommodate the trail which runs north and south along the coast. Three hundred feet from the sea there is a group of platform mounds on the south side of the wall, which were not plotted on the map.

DETAILED DESCRIPTION OF BUILDINGS.

The Castillo (Structure No. 1).—The highest and most imposing edifice at Tulum was named by Stephens the Castillo, or "castle." It stands on the summit of the precipitous cliff, 40 feet above the sea, where it is so clearly visible against the monotonous coast-line that it has been made a landmark on all charts. This building we believe to be the "very large tower" seen by Grijalva and described by Juan Diaz in 1517 (plate 12, B). The principal façade of the Castillo (plate 15) faces away from the sea and forms part of the eastern side of the inner inclosure. Rooms may be seen at three levels, but these, as usual in Maya buildings, are not directly superimposed, and they appear to have been erected at different periods. For a clear understanding of the edifice, we must follow these changes and additions in detail.

The oldest part of the Castillo now forms the wings which flank the main stairway. These wings were once the ends of a large palace, like 21 or 25 at Tulum, which stood on a terraced platform 10 feet high. It contained the usual two long, narrow rooms with columns in the broad entrance and a row of columns in the long axis of the outer room. The inner room was reached by three doors and probably contained the customary sanctuary. Another period is represented by the third or upper range. It is erected on a solid mass of masonry which was built across the central portion of the palace and reinforced by a buttress on the east and a stairway on the west. The rooms which flank the solid portion are connected by a half-vaulted passage (fig. 15) running along the east wall of the former outer room. The nature of the original palace and the blocked-in portion are seen in figure 41, *a*. On the platform thus erected was built a two-room temple which forms the upper range shown in figure 42. The third and fourth phases of construction are represented by two small chambers built on the ground-level against the substructure of the original palace on either side of the stairway (fig. 41, *c*). These two buildings, stylistically different from each other, could not well have been set up at the same time.

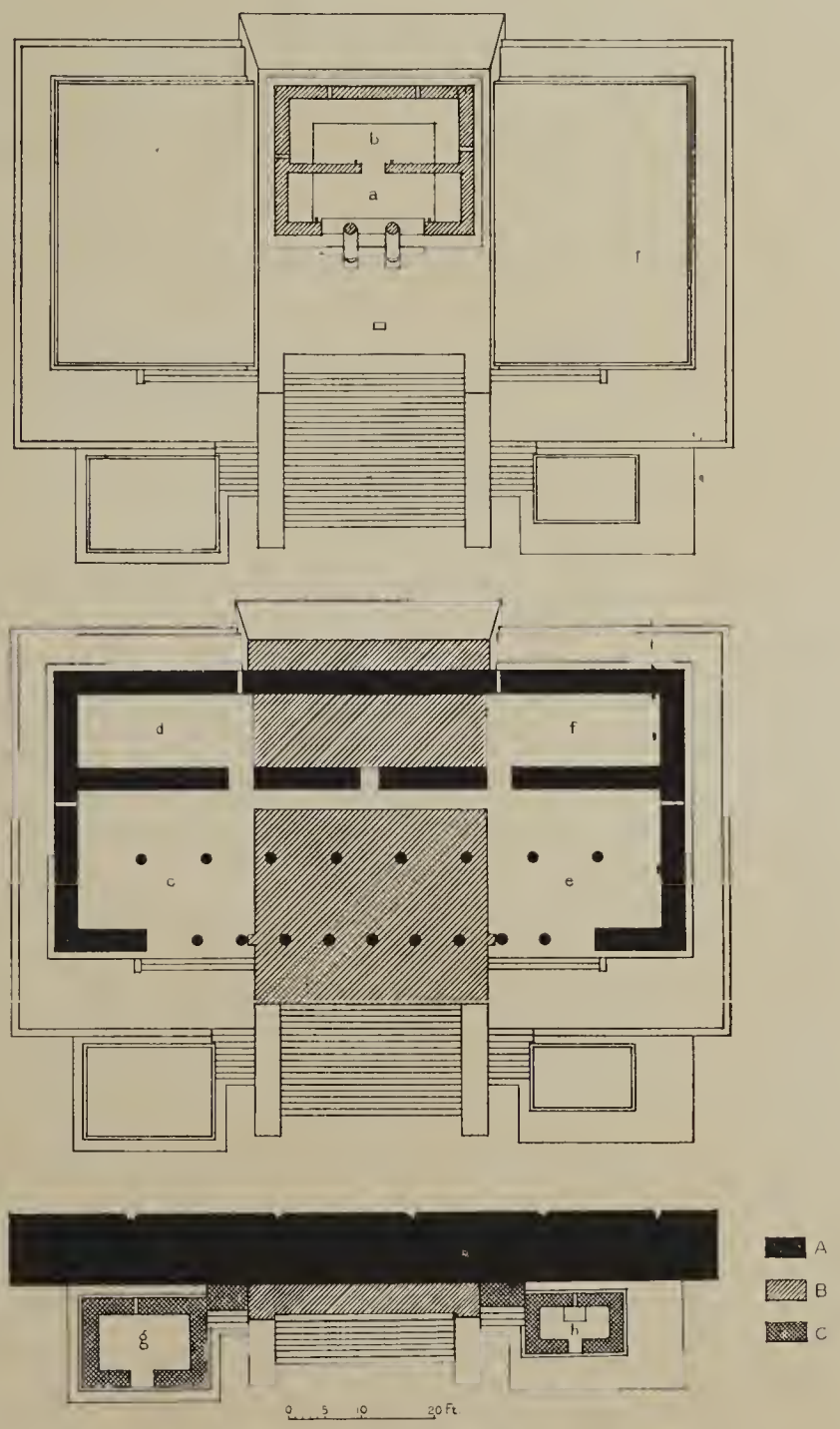


FIG. 41.—Plans of three levels of the Castillo, Tulum.

Composite buildings of this general type are found in several other Yucatec cities, notably Santa Rosa Xlabpak, Labna, Kabah, Chichen Itza, and El Meco. In each case they represent a series of additions to an older building and a striving for greater height and more imposing effect. The Tulum Castillo, however, is of unusual interest, owing to the radical changes of style seen in different parts of the building. The original palace and room *g* had flat ceilings, a two-member molding, and round columns with square capitals. Room *h* is vaulted and shows every evidence

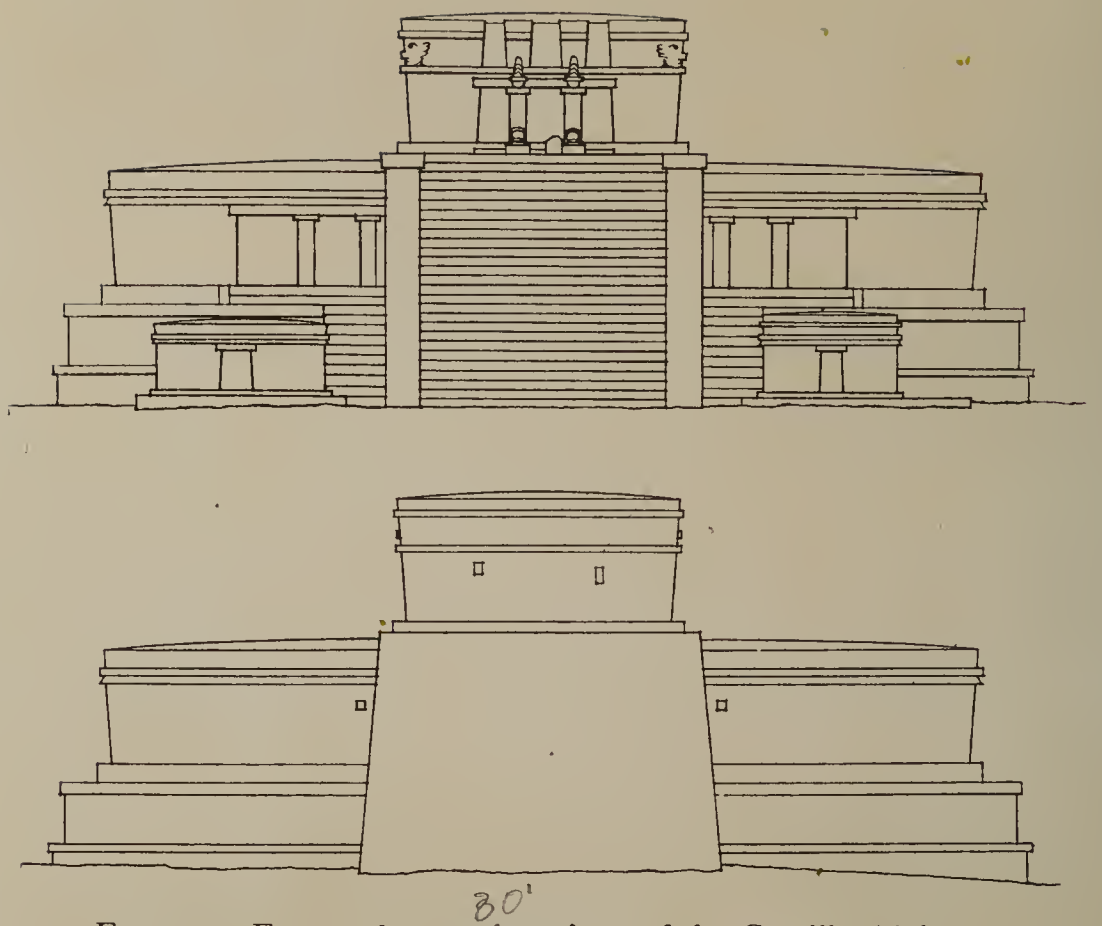


Fig. 42.—East and west elevations of the Castillo, Tulum.

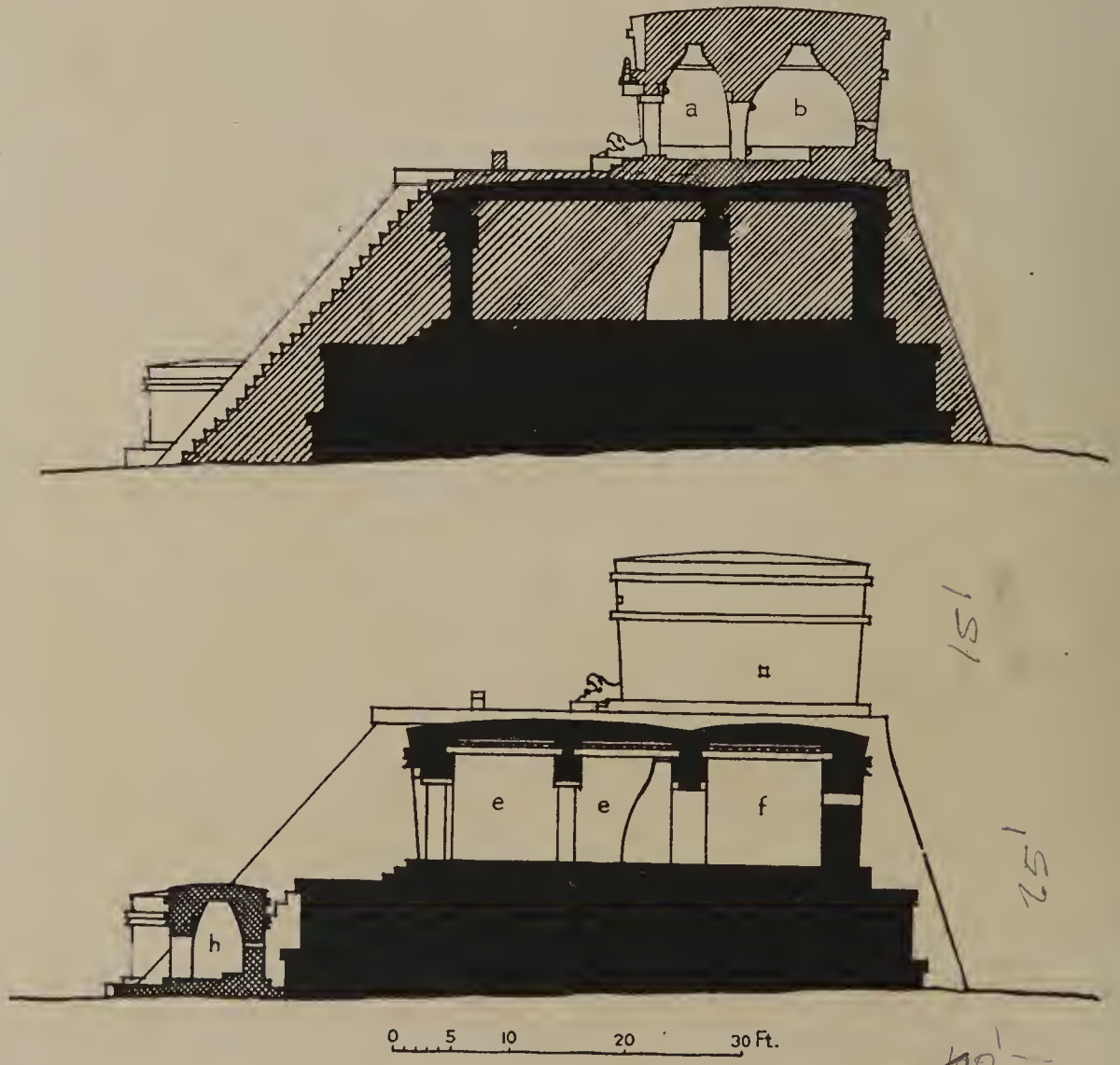
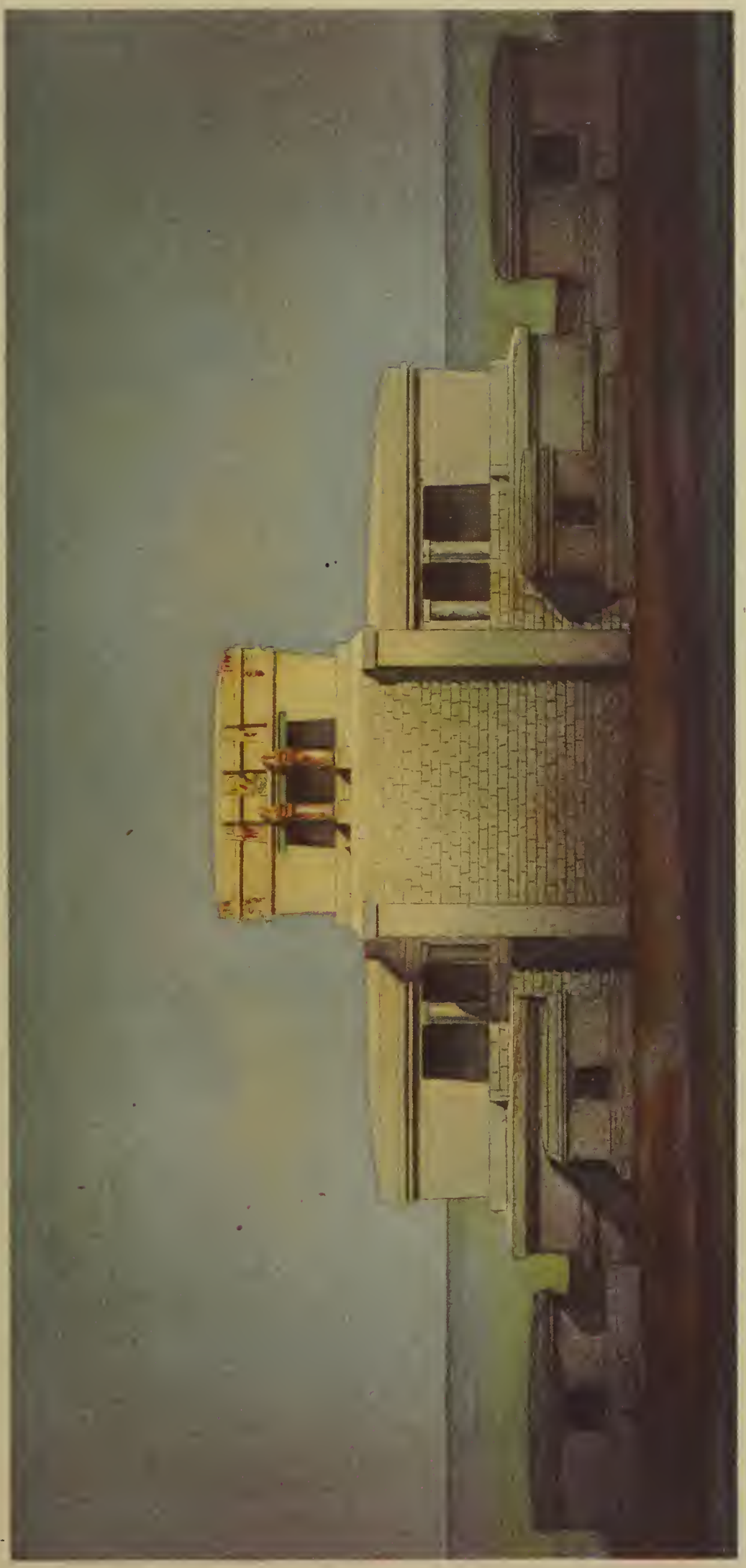


Fig. 43.—Cross-section of the Castillo, Tulum.



THE CASTILLO AT TULUM.

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of early construction. The third range, rooms *a* and *b*, is vaulted, has serpent-columns, and has different moldings from the rest of the building. While the stylistic criteria for dating are discussed later, we shall say here that room *h* is apparently the oldest part of the edifice; room *g*, on the lowest level, and rooms *c*, *d*, *e*, and *f*, on the second range, were next constructed; rooms *a* and *b*, on the third range, represent the final period of expansion.

The main stairway of the Castillo, which dominates the whole façade (plate 15), is 30 feet wide and 25 feet high. It leads to a terrace in front of the upper range, which commands a splendid view of the whole city and of the coast to the north and south. In the center of the terrace is a small upright stone which apparently served as a sacrificial stone on which victims were extended while the priests tore out their hearts in the sight of the populace in the inner inclosure below.

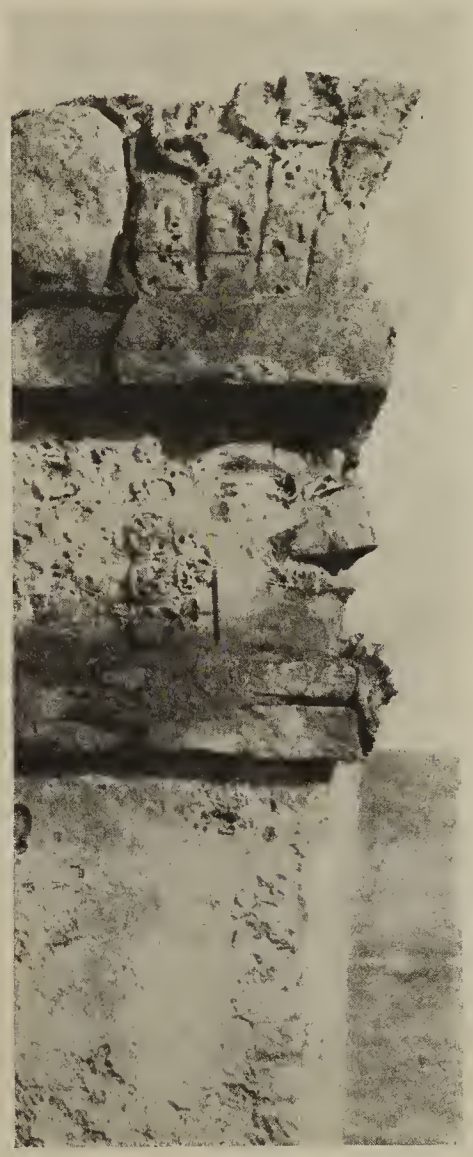

FIG. 44.—Grotesque face, third range of the Castillo, Tulum.

The upper range (plate 17, A) is really a two-room temple standing on the foundation we have described. The entrance is divided by two serpent-columns (fig. 11), to-day badly battered. In a general way they conform to the well-known examples at Chichen Itza, but they are much less massive and do not exhibit the same wealth of detail in painted relief. Of the heads at the base of the columns, nothing remains except the masonry platforms on which they stood. The shafts are intact and still bear evidence of feather markings in paint. The capital, which represented the tail of the serpent, is partly broken away, but a fallen fragment disclosed the customary rattlesnake markings. Above the columns is a long sunken panel over which are two rectangular moldings. Above the three doors are sunken niches, each of which contained a stucco figure in relief. The central figure (plate 3, A) is the Diving god, a winged deity flying downward with his feet over his head, a very common subject in stucco relief at Tulum. The northern figure (plate 2, C) is standing erect, but the southern relief has totally disappeared. Several fragments found at the foot of the stairway (plate 9, *a*, *b*) may have come from it. On the two corners of the west façade are grotesque faces with projecting snouts. The faces themselves, fringed with feathers, are placed between the moldings, and tall head-plumes appear on the wall above the upper moldings. A similar treatment of the corners is seen on the Temple of the Frescoes (fig. 24).

The outer chamber (fig. 41, *a*) is 24 feet long, 6.5 feet wide, and 13 feet high. On each side of the door are stone rings to support a curtain. Over one column the butt of a conch-shell protrudes. At each end of the room are low benches

which served as altars. The vault of this and the next room is shaped like the neck of a bottle. The doorway leading to the inner room is illustrated on plate 5, A. It has a sunken panel painted a brilliant turquoise blue, with a geometrical figure in the center. The north half of the room was painted red and the south half blue.

The inner room (fig. 46) is a few inches longer than room *a* and 8 feet wide. At the corners of the door are four stone rings for hanging a curtain. Running across the back and ends of the chamber is a bench on which the present-day Indians

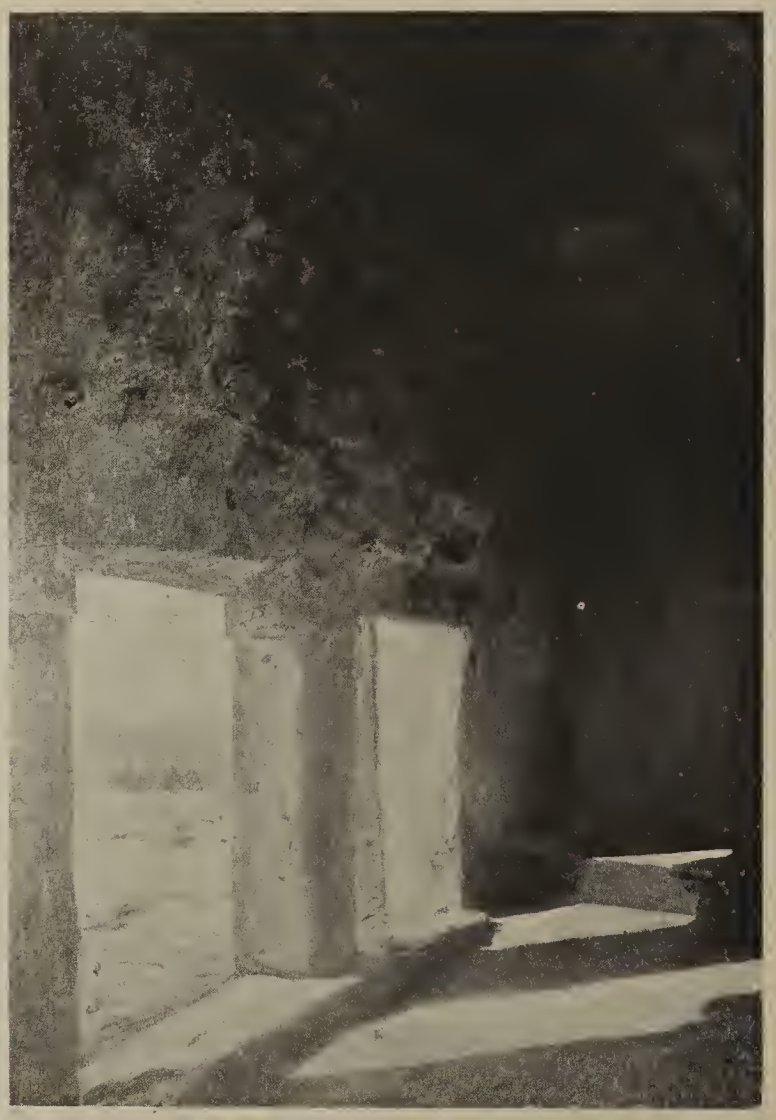

FIG. 45.—Room *a*, Castillo, Tulum.

FIG. 46.—Room *b*, Castillo, Tulum.

have placed a small cross (fig. 10), to which they pray. Above the bench are four windows. The two in the east wall are splayed on the under side and command a magnificent view of the sea, some 70 feet below.

The two wings forming the second range are identical in plan. They are reached by narrow stairs adjoining the balustrades of the main stairway. The bench which surrounds the building is so high that steps must have been necessary to reach the doorways. These were not actually observed, owing to the débris of the fallen roof and walls, but are shown on the elevation (fig. 42). The doorways each had two columns with square capitals. In each case the inner column rests against the masonry mass which supports the upper range, while the other stands

Castillo, Tulum. A, south side; B, north and west façades.

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in the center of the doorway. From the spacing of these columns it appears that the total number present before the erection of the third range may have been uneven. This is unusual, and it is possible that they were slightly irregularly placed and the number was even.

Room *c*, the outer room in the north wing, has poorly preserved frescoes on the east, west, and north walls and also crude stucco heads, hasty sketches of which we illustrate on figure 47. The south wall discloses a narrow terrace or ledge on which the base of the roof rested. In the center of this ledge is a large square hole which formed the socket for the huge timber which ran from end to end of the room across the tops of two columns. Smaller beams, the sockets for which are now visible in the east and west walls, were placed on top of the main timber, and above were small poles placed almost in contact with each other. Over this wooden foundation was a cap of cement and stone about 2 feet in thickness.

Fig. 47.—Stucco heads in room *c*, Castillo, Tulum.

Room *d* is entered by a door in the east wall of room *c*. The wooden lintel is set back to form a sunken panel on each side of the wall between the two chambers. Room *d* is long and narrow and without features of interest save a window overlooking the sea.

Between rooms *c* and *e* is a 35-foot passageway running through the masonry mass which supports the third range. This passage is a half-vault built against what was once the east wall of the outer room of the original palace. The half-vault (fig. 15) is shaped like a bottle-neck and is similar to those in the third range above it. In the center of the east side of the passage is a door which opens into the old blocked-up back room. Treasure-seekers, probably members of the Mexican military occupation of 1900, have dug into the masonry for 10 or 15 feet to the north of the door and also upwards nearly to the floor of the room above. The portion excavated is directly beneath the walls separating rooms *a* and *b*, and this wall is settling in a manner which promises the speedy collapse of the third range. We discovered this after living in the rooms in question for nearly two weeks and were much perturbed by perceiving that the massive stone lintel between rooms *a* and *b* had cracked in two, apparently overnight.

The east wall of the passage is covered with at least nine layers of stucco, of which four or five were painted with frescoes. It is supposed that the Maya

renewed their plastering either at the end of each katun (20-year period) or 52-year cycle. The 52-year period does not seem possible, because it gives results at variance with other data, but the theory of katunic renewals may be applicable to most east-coast sites. In this case we may perhaps assume that the plaster was not renewed after the wall in question no longer faced the major room of the building, but was inclosed in a narrow passage. The plaster count means, then, that this wall of the passage and the room on which it opens are 180 or more years older than the third range. As this part of the building probably dates from just after the Toltec invasion or the first part of the thirteenth century, the third range may have been erected during the fifteenth century.

The frescoes on the outer layer of plaster were covered with mold and dirt. At the top appears to have been a glyphic inscription and below was a row of elaborately dressed figures stylistically resembling those on the next layer of plaster. This stratum was uncovered for several feet to the north of the door to the blocked-up room. Tracings of several figures are shown on plate 4. At the top of the passage ran a constellation-band, from which depended a series of deities; those seen on plate 4, *b*, adjoined the door. The right-hand figure is a plumed serpent-head. The central figure is god B, identified as Kukulcan, the Feathered Serpent, or Chac, the Rain deity. In one hand he holds a purse and in the other the plumed serpent seen to the right of his head. The third figure is an alligator, the Aztec *cipactli*, from whom flow torrents of water. This whole series apparently has to do with ceremonies for rain.

Beneath the constellation-band with its pendant deities is a series of very large figures. The example shown on plate 4, *a*, is not directly beneath but a little to the right of those on *b*. The plaster at the head and shoulders has been chipped away, but the rest of the painting is fairly distinct. It represents a walking priest or noble in elaborate regalia. The head is crowned with feathers, and a cloak of feathers falls to the feet, which are incased in elaborate sandals. In his hands he carries a Manikin Scepter. This device is a curved staff with an animal figure on top and a serpent-head at the bottom. Its development may be traced throughout the greater part of Maya art. This, however, is one of the most recent examples. At the heel of the striding figure is a part of the body of a serpent, a tiny head and a hand holding a staff, and over it a bowl of offerings similar to those seen in the codices and in the frescoes at Tulum. Above this is a serpent-head and the plumes of another personage. Finally, at the very top, over the head of the principal being, is part of a scorpion, evidently one of the figures attached to the constellation-band.

The south end of the passage opens into room *e*, the frescoes continuing along the east, south, and west walls. These walls have five small stucco heads on them, of which the best preserved are seen on figure 48. Stephens also noted on the central columns similar heads, which have disappeared. He describes one resembling a rabbit, which may have been like our *c*. The roof of this room appears to have been similar to that of room *e*. In the east wall a door with wooden

Castillo, Tulum. A, third range; B, east façade.

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lintels and recessed panels opens into room *f*. This is long and narrow, and a window in the east wall is the only noteworthy feature.

Room *g* is at the north side of the stairway to the north wing. It stands on a terrace 1 foot high. The ceiling has fallen, but appears to have been flat. The type of molding was probably the same as that on the second range, but

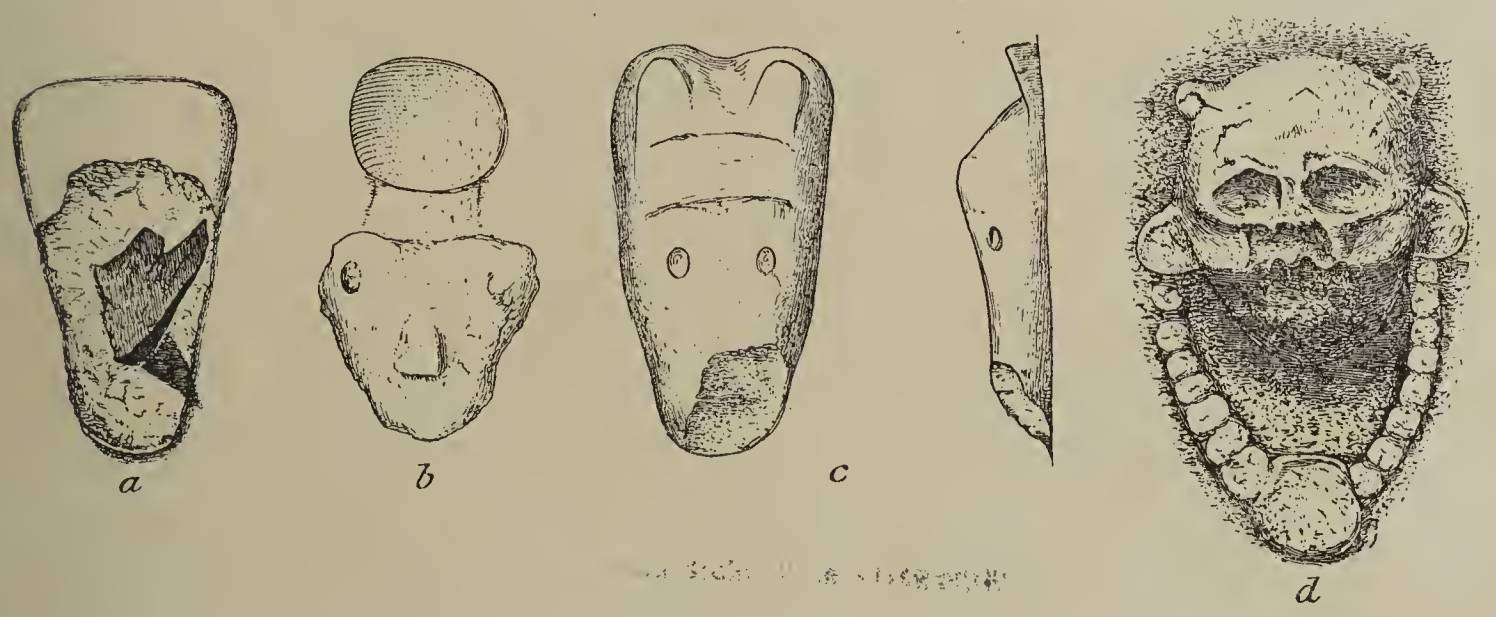

FIG. 48.—Stucco heads in room *e*, Castillo, Tulum.

this is not certain, for though a few stones have not fallen they are considerably twisted out of place. Room *h* stands in front of the south wing. It is really a miniature temple with vaulted ceilings, windows in the north, south, and east walls, and an altar against the back wall. It is just large enough to hold a cot bed, and one of our party slept here in 1922 and found it crowded quarters.

FIG. 49.—Room *h*, Castillo, Tulum.

The back of the Castillo (plate 17, B) is thirty-odd feet from the edge of the sea. The fortress-like façade, with its large central buttress, well answers the description of Juan Diaz in 1517. The central buttress (plate 12, B) is covered with projecting pegs of stone, on which plaster bas-reliefs were hung.

Structure No. 2.—The Castillo is flanked by two small temples, almost identical with each other in plan, which, with the Castillo, form the east side of the Inner Inclosure. Both stand on low platforms which run into the Castillo substructure.

The front elevations are shown in figure 51, *b* and *c*. Structure 2, the northern edifice, is more badly ruined than its counterpart, structure 3, for the collapse of the beam-and-rubble roof has obliterated the interior columns and the rear wall, as can be seen on plate 16. The ground plan of this building is shown on figure 54. The single room measures 18.5 by 9 feet. There appears to have been no step surrounding the exterior wall, a decidedly unusual omission in an east-coast building. In front of the door is a low rectangular platform.

Structure No. 3.—At the south of the Castillo stands structure 3. Like structure 2, it contains a single room. The flat roof has fallen, but the walls and the interior columns are intact. The columns have square capitals and probably

FIG. 50.—Structures 3, 9, and 10 from the south wing of the Castillo, Tulum.

supported the roof in the manner shown on figure 51. The southern column was decorated in 1916 by a stucco head in low relief (fig. 52), which had been broken off between that date and 1922 by persons unknown. In the north, south, and east walls there are small windows. The outer wall is surrounded by a step in contrast to structure 2.

In front of the doorway three steps descend to the level of the court. Just above the steps is a small altar consisting of a stone drum 1.5 feet long and 9 inches in diameter. Buried in the débris along the edge of the terrace, between the stairs of structure 3 and the corner of the plaza, we found the crude stone statue shown in plate 2, A. It is about 3 feet high. What now remains is no more than a stone base over which had been built a carefully modeled figure in plaster. This figure apparently was kneeling, with one arm at the side and the

other holding a large circular object at the breast. In aboriginal times it undoubtedly was the idol of either structure 3 or the adjacent Temple of the Initial Series and was cast down and battered by the Spaniards, as was every other sculpture at Tulum.

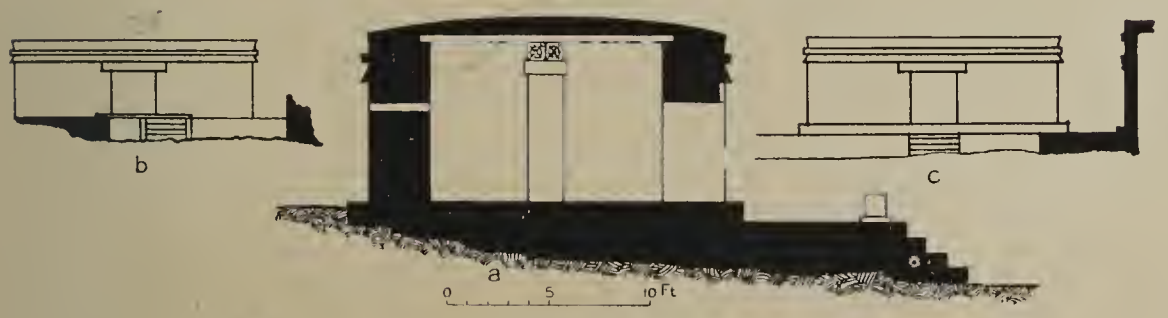

FIG. 51.—*a*, *c*, structure 3; *b*, structure 2.

FIG. 52.—Stucco head in structure 3.

Structure No. 4.—This building, with the Temple of the Diving God, structure 6, and a wall, forms the north side of the inclosure. It stands on an L-shaped platform shared by structure 2 and the Temple of the Diving God, from each of which it is separated by narrow gaps. The gap on the west was blocked up by a mass of masonry erected after the completion of the buildings.

FIG. 53.—Northeast corner of the Inner Inclosure, showing the Castillo, structures 2 and 4, the Temple of the Diving God, and structure 7.

The outer doorway has a lintel of three wooden beams. Inside the door on the east two conch-shells are set in the wall and on the west there is one. There are windows in the north and south walls. The ceiling of beams and rubble has fallen. At the eastern end of the room is a door leading to a small sanctuary.

This door is surmounted by a sunken panel in which are traces of frescoes painted in red, green, and black. Over the panel a molding consisting of a triangular and a rectangular member runs across the end of the room about 9 inches below the former level of the ceiling. The lintel is composed of a stone and four small wooden beams. The sanctuary is 5 feet long by 2.5 feet wide, and even in this diminutive room the flat roof has fallen.

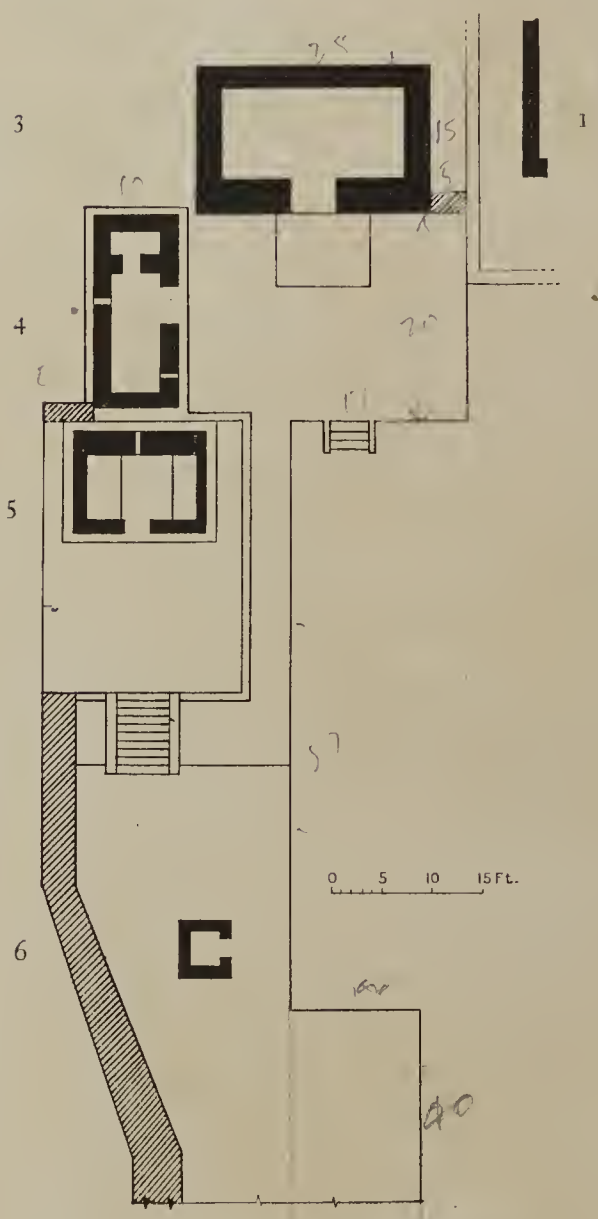

Fig. 54.—Ground-plans of structures 2, 4, and 6, and Temple of the Diving God (structure 5), Tulum.

Normally, the sanctuary is a small room built against the center of the back wall of a larger room, an arrangement of which there are many examples on the east coast. The present case, however, is the only one in which the end of a room is blocked off for this purpose.

The Temple of the Diving God (*Structure No. 5*).—This small temple is one of the most picturesque and perfect in the city. The substructure is an older building 27 feet long, 20 feet wide, and 9.5 feet high, which has been blocked in solid. This older building has a two-member molding like the others which flank the Castillo. On the

Fig. 55.—Cross-section and elevation of structure 4, Tulum.

south side it had two doors separated by a masonry pier which can be seen on plate 18, A. After the blocking-in of the original edifice a flight of stairs was built against the west side and a small temple was built on the east end. This temple faces west and fronts on a platform consisting of the roof of the older construction. It is this upper and more recent building which we shall describe in detail.

The most striking features of the new temple are the outward slope of the walls, the curved upper zone, and the fact that the upper and lower zones lie in different planes. The outward slope of the walls was carefully measured and is shown on the accompanying elevation. That it is not exaggerated is attested by

Temple of the Diving God, Tulum. A, south façade; B, west façade.

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the photograph on plate 18, B. This feature is, of course, not uncommon on the east coast, but the example under discussion is the most pronounced yet found. The upper zone, it will be seen, is not flat, but curves outward towards the top in such fashion as to increase the effect produced by the sloping lower zone. It is a curious fact that the base of the upper zone is set back a few inches from the plane of the lower zone. The sides of the doorway also slope at the same angle as the lower zone, but in the opposite direction, so that the top of the doorway is narrower than the bottom. Above the doorway is the usual sunken panel, above which is a very heavy molding decorated with stucco geometric ornaments

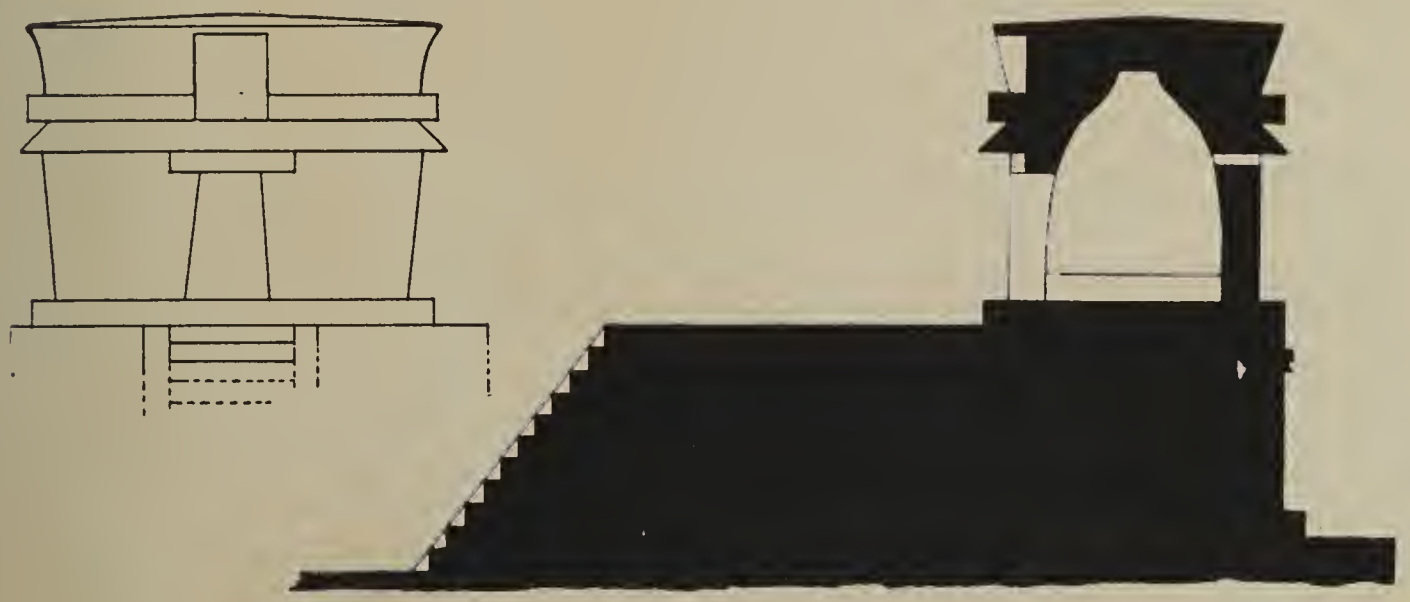

FIG. 56.—Cross-section and elevation of Temple of the Diving God, Tulum.

in low relief (plate 18, B). Over the door in the upper zone is a niche which cuts through the upper member of the molding. This niche contains the figure from which the temple takes its name, a winged deity represented in the act of flying downward (fig. 22). The god has wings on his arms from shoulder to elbow and also a broad tail on which is painted a conventionalized feather pattern. The wrists and ankles are adorned with heavy rings, while on the head is an elaborate crown. Two long tassels hang from the left wrist, and clasped in the hands is a spherical object.

The lower zone, on each side of the doorway, was once decorated with frescoes. Those to the south of the door have weathered away, but to the north there remain the figures reproduced on plate 6. The subject is a procession of deities carrying offerings and ceremonial standards. These gods are divided into three rows by the intertwined bodies of highly conventionalized serpents. A similar subject was painted on the north wall of the building, but so much plaster has peeled off that only two figures can now be discovered (fig. 27).

The interior contains but one room. It measures a little more than 9 by 11 feet. Across the ends of the room are benches like those in room *a* of the Castillo. The back wall is covered with frescoes. These consist of five nearly obliterated

figures covered by the arched body of a two-headed serpent. The painting on the lower part of the north end of the room is shown on plate 5, *b*. It will be seen that this differs in the use of colors and in subject-matter from the frescoes on the exterior walls.

Structure No. 6.—In front of the steps of the Temple of the Diving God there was formerly a small shrine. This was standing in 1916, but between that time and 1922 it had been crushed by a falling tree. It measured 5.5 feet square and 4 feet high. On the south was a doorway with a sunken panel above it. There was a molding consisting of one rectangular member.

FIG. 57.—Structure 7, Tulum.

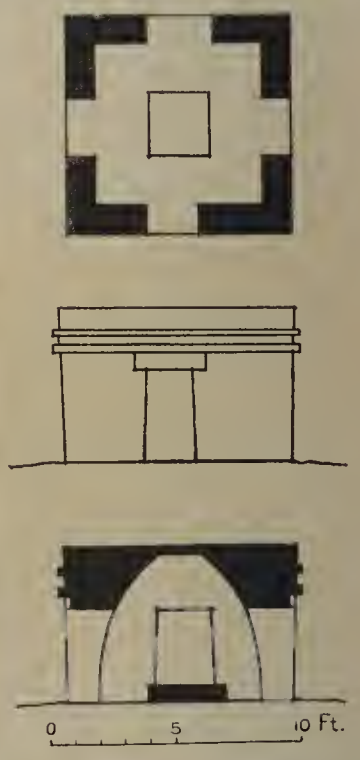

FIG. 58.—Structure 7, Tulum.

Structure No. 7.—In front of room *g* of the Castillo is a large shrine; in fact, probably the largest edifice which belongs in that class of building. It is 10 feet square and 7 feet high and it has two rectangular moldings. The four doorways, which slope inward towards the top, are capped by sunken panels. The interior is vaulted and 6 feet high. It is not possible to stand erect, however, for there is an altar 2.5 feet square and 1 foot high in the center of the floor.

Structure No. 8.—Directly in line with the stairway of the Castillo is a platform mound 27 feet square and 9 feet high. Unlike most such mounds, it exhibits a rectangular molding. On the east and west sides there are stairways flanked by balustrades. This mound belongs to a specialized class of platform mound which was commonly placed in front of the chief temple of an east-coast city. We believe that structure 8, unlike most platform mounds at Tulum, had no heavy construction on the summit and that it was used primarily to stage religious spectacles in sight of the populace.

The Temple of the Initial Series (*Structure No. 9*).—This temple takes its name from the fact that on the floor the fragments of stela 1 were discovered by Stephens.

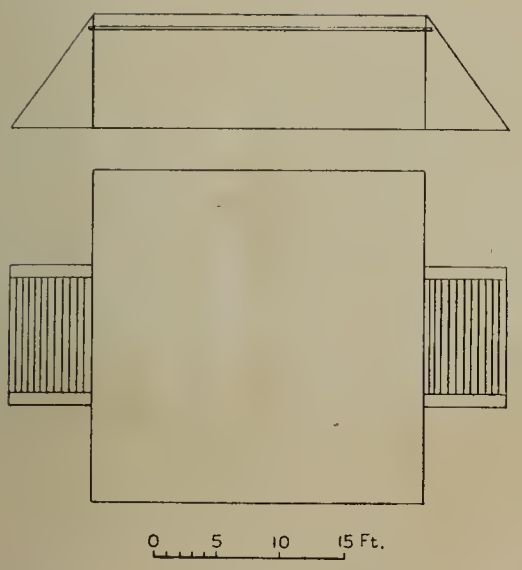

FIG. 59.—Plan and elevation of structure 8, Tulum.

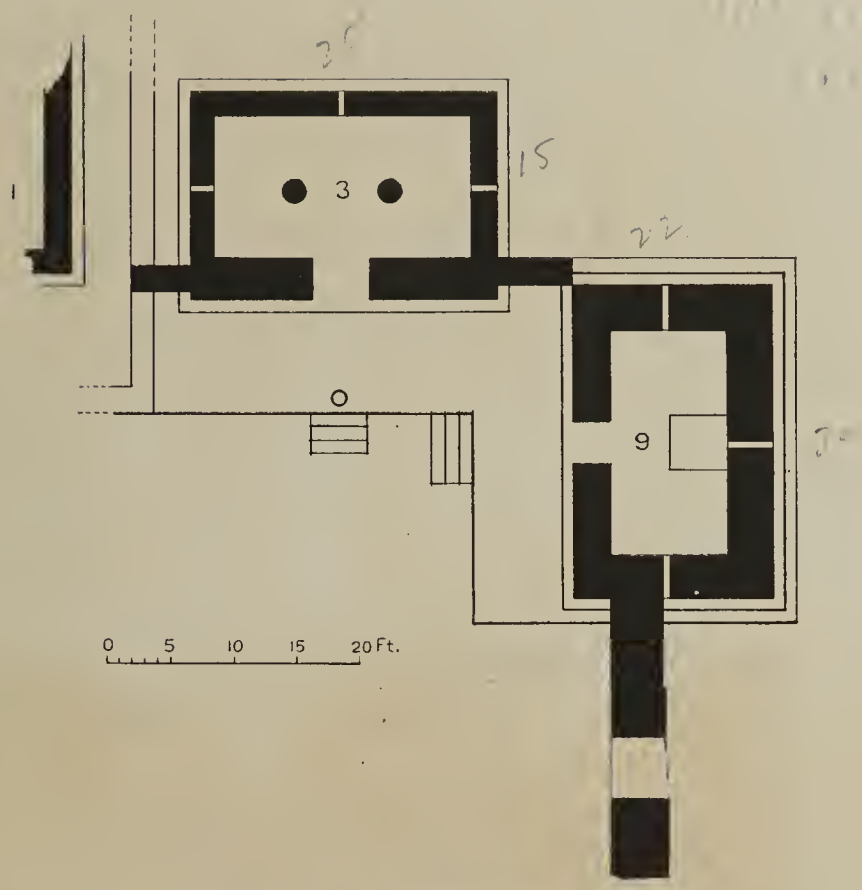

FIG. 60.—Ground-plans of structure 3, Temple of Initial Series (structure 9), Tulum.

FIG. 61.—Stucco relief, Temple of Initial Series, Tulum.

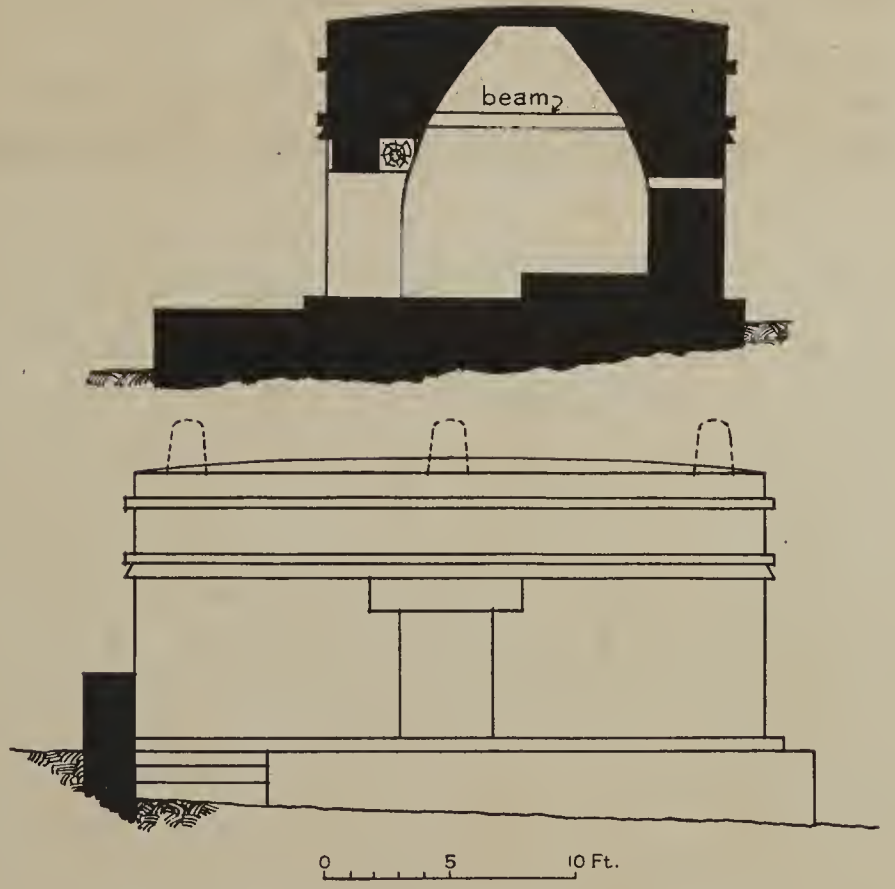

FIG. 62.—Elevation and cross-section, Temple of Initial Series, Tulum.

It stands at the southeastern corner of the inner inclosure, between structures 3 and 10, to each of which it is joined by a wall. The principal façade, which faces north, is decorated by two moldings and a stucco figure in low relief on the east side of the door (fig. 61). Over the door, just above the upper molding, is a modeled leg which evidently belonged to a statue seated on the edge of the roof. Examination of the roof revealed the fact that other statues had once stood on the corners. The position of these is suggested in figure 62. The doorway is capped by both a stone and a wooden lintel.

FIG. 63.—North façade, Temple of Initial Series, Tulum.

The walls are 3 feet thick and are pierced by windows on the east, west, and south sides. Against the south wall, opposite the door, is a rectangular altar. The vaulted ceiling is 11 feet high. At two-thirds of the height of the vault there is a pair of wooden beams.

Structure No. 10.—This small palace occupies about one-half of the south side of the inner inclosure. The ground plan (fig. 67) discloses a single chamber 39 feet long and 18 feet wide. The flat ceiling has collapsed, carrying with it the south and west walls, as well as the interior and exterior columns. Of these there appear to have been four in the center of the room and two in the doorway. The elevation of the north façade, restored from the portion still standing, is seen in figure 64.

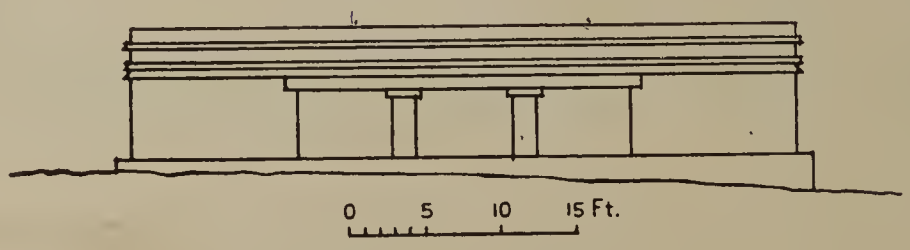

FIG. 64.—Elevation of structure 10, Tulum.

Structure No. 11.—This is the only building on the west side of the inner inclosure. Three walls have fallen and the east wall alone remains. The building stood on a platform built out from the inclosure-wall, which is here about 6 feet high on the outside and 2 feet high on the inside. The fallen west wall apparently rested almost on the edge of the inclosure-wall. The standing façade is decorated with two moldings and a sunken panel in which are traces of blue paint. The interior was vaulted. On either side of the door conch-shells were sunk in the wall.

Structure No. 12.—A platform mound, at a slightly lower level, occupies the corner between structures 10 and 11. It is 43 feet square. On the west side is a flight of five steps, while on the east it merges with rising ground.

THE INNER INCLOSURE.

The buildings which we have described, together with several pieces of wall, form the Inner Inclosure, which we shall now discuss as a unit (plate 20, A). The eastern side of this court is formed by the Castillo and structures 2 and 3. The elevation is shown in figure 67. The two lower buildings are joined to the Castillo

FIG. 65.—East façade of structure 11, Tulum.

by short walls. The northern side of the court is formed in part by structure 4 and the Temple of the Diving God. Starting at the northwest corner of the latter, a wall runs westward, with two slight bends, to the northwest corner of the inclosure. At this point the wall to-day is 10 feet high on the outside, 2 feet high on the inside, and 4 feet thick. The greater height on the outside is explained by the fact that the level of the court in general has been built up and also by an L-shaped terrace which runs from the Temple of the Diving God to this corner. This terrace the writer believes to have been the substructure of a house built of perishable materials. It is quite probable that it contains vaulted tombs, like the platform mounds.

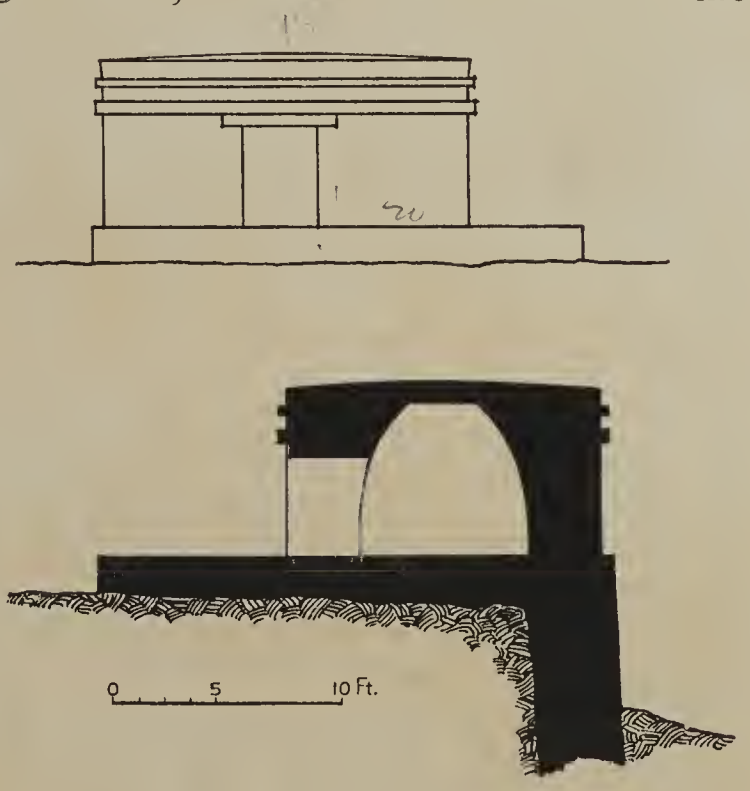

FIG. 66.—Elevation and restored cross-section of structure 11, Tulum.

The present battered condition of the west side of the inner inclosure may be studied on plate 20, A. The ground plan and a restored elevation of this stretch are given in figure 67. From the corner the wall runs southward for 55 feet. At this point it becomes both higher and thicker, and a few feet farther on it is pierced by a vaulted passage (plate 19, C). Although partly destroyed, half of the vault is still standing. The walls on each

side of the east end of the passage appear to have been decorated with low-relief stucco motives. Twenty-four feet farther south is a second gap in the wall (plate 19, A). This is wider than the former and does not seem to have been closed in. Across the passage there is a distinct step, below and at right angles to which is a line of stones. These we are unable to explain unless they formed part of a sloping pavement. Fourteen feet farther south the wall passes under structure 11 and finally terminates at the edge of structure 12.

The Temple of the Initial Series and structure 10 occupy most of the south side of the Inner Inclosure. The 23-foot gap between them is filled by a wall in which there is a gateway. The ground on this side of the court (fig. 67) slopes

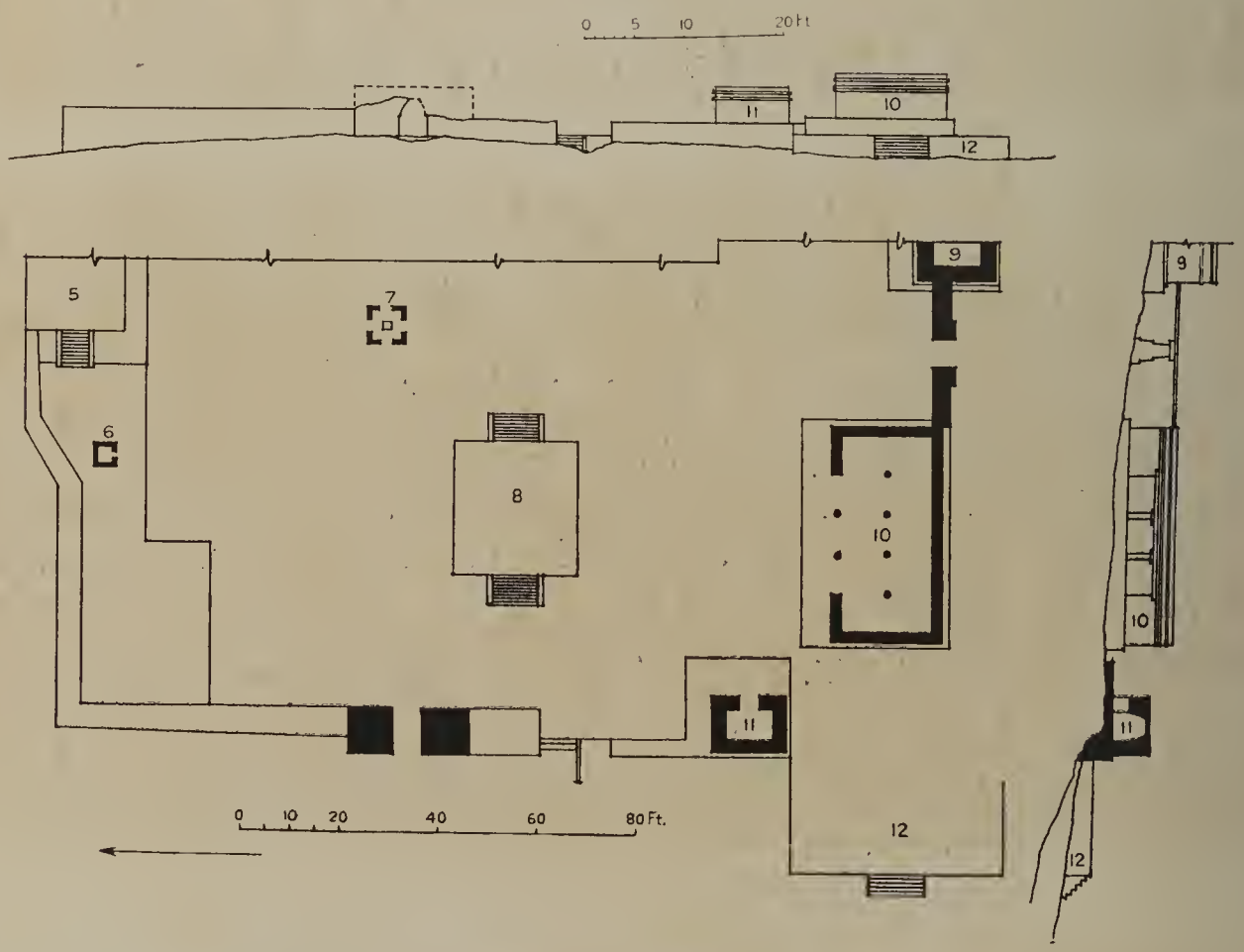

FIG. 67.—Inner Inclosure, Tulum.

rather steeply from east to west, so that the roofs of the buildings rise one above another, although all are about the same height from the ground. The wall is 8 feet high and had a molding along the north side. The gateway (fig. 68) is vaulted and has two offsets on each side. The capstone is set back from the surface of the wall to form the usual sunken panel. On either side of the gate there were low-relief stucco decorations. Although almost entirely gone, just enough remain to suggest that the pattern may have represented conventionalized serpent-jaws in profile, a motive which is characteristically placed on either side of doorways of ruins in the southern part of Yucatan.

The lightly built walls and many gateways suggest that the function of the Inner Inclosure was religious and civic rather than military. Within the inclosure all the buildings except structure 10 appear to be intended for religious purposes,

Gateways in the Inner Inclosure, Tulum. A, C, west wall; B, south wall.

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in contrast with the group outside, most of which are residential. This court, then, we must regard as given over primarily to the priesthood; yet it is perhaps worthy of note that the north wall presents a barrier towards an assault from the cove in the cliff, and also that the top of the Temple of the Diving God and the top of temple 45 both command the beach, and an attacking party must run the gauntlet of cross-fire from these two elevations.

Structure No. 13.—This is a platform mound lying southwest of the Inner Inclosure. It is roughly L-shaped and is ascended by two stairways. The height is from 1 to 3 feet. Behind the center of the north stairway the presence of two tombs is clearly indicated by the partial collapse of their vaults. Other tombs apparently flank these.

Structure No. 14.—A square platform mound lies contiguous to and northwest of structure 13. It has no features of particular interest.

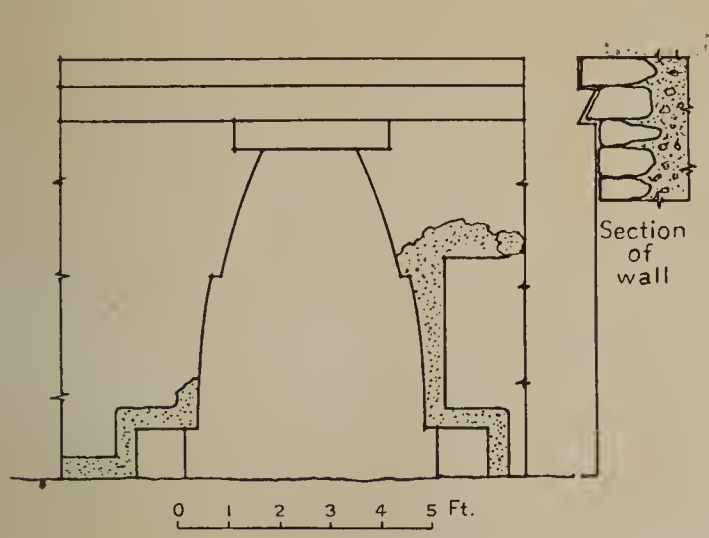


FIG. 68.—Gateway in the south wall of the Inner Inclosure, Tulum.

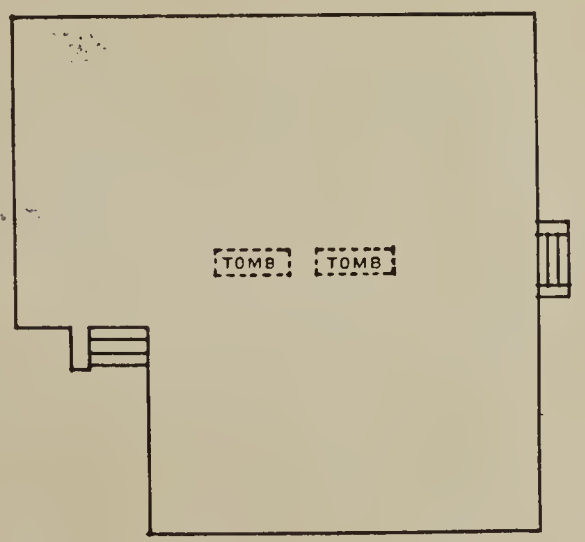


FIG. 69.—Structure 13, Tulum.

Structure No. 15.—In front of the Temple of the Frescoes are the remains of either a large altar or a small platform mound badly shattered by a tree which grew through it. It may be seen in the foreground on plate 20, B, and on figure 74, B. The original dimensions were about 7 feet north and south, 5 feet east and west, and 1.5 feet high.

The chief importance of this small mass of masonry arises from the fact that stela 2 had been built into it. This sculptured fragment is 4 feet 3 inches long, 1 foot 10 inches wide, and 9 inches thick; it probably represents three-fourths of the original slab. When first seen by the writer it lay face downward on the east side of the ruined altar, of which it had undoubtedly formed part, for the back and one side had been covered with plaster. Near by were two pieces of a stone metate which can be seen to the right of the altar on plate 20. The date on the stela is katun 2 Ahau, which probably is the equivalent of 1261 A. D. This question, as well as the artistic value of stela 2, has been previously discussed.

The Temple of the Frescoes (*Structure No. 16*).—This diminutive two-storied temple stands on the east side of the main street, in front of the inner inclosure.

It is the most richly ornamented building at Tulum, both in bas-relief and in frescoes, and structurally it is exceptionally interesting on account of its several periods of growth.

The original edifice was a single cell-like room marked A on figures 70 and 71. This room was later completely inclosed in another building (B), the walls of which form a portico on three sides and are in contact with the older walls on the fourth side. This curious arrangement is also found in the Castillo at El Meco. A third addition was a second story (C) and a flight of steps at the south end. The lower range evidently was unable to bear the extra load thus imposed and it became necessary to strengthen the walls. This was effected (D) by a column in the door of the inclosed room and buttresses on either side of the door, by a heavy retaining-wall across the outer east wall, and by filling in one end of the north corridor. These repairs may not have been carried out at the same time. In the north passage it was certainly needed, as the vault has partially collapsed. Finally, there is a platform mound on the east side which is partly overbuilt by the retaining-wall.

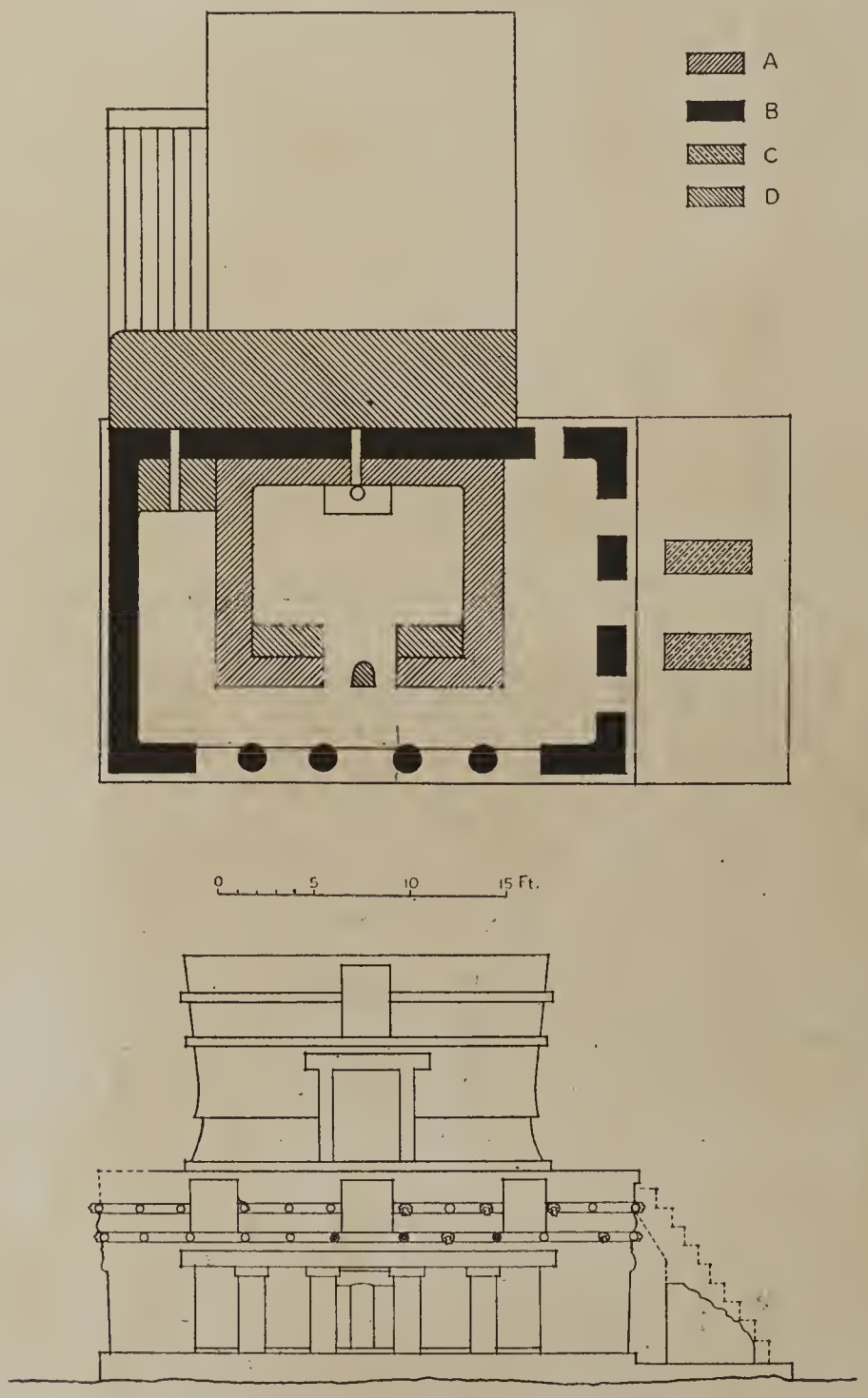


Fig. 70.—Ground-plan and elevation, Temple of the Frescoes, Tulum.

The original building is to-day the inner room. The ceiling is vaulted, and it was formerly 9 feet high and 9 feet wide, the vault springing almost from the floor. Against the back wall is a rectangular altar with a circular depression, and above is a window which, like the window in the north corridor, was carried through the second wall (fig. 71), but was later blocked by the retaining-wall (D). The piers on the west side of the room and the columns in the door are seen in figure 72, B, and figure 73, A. Traces of fresco are visible on the wall.

The exterior of the original building had two rectangular moldings and a vertical niche over the door which contained a figure in stucco of the Diving god. The moldings themselves, the intermolding space, and the lower-wall zone were

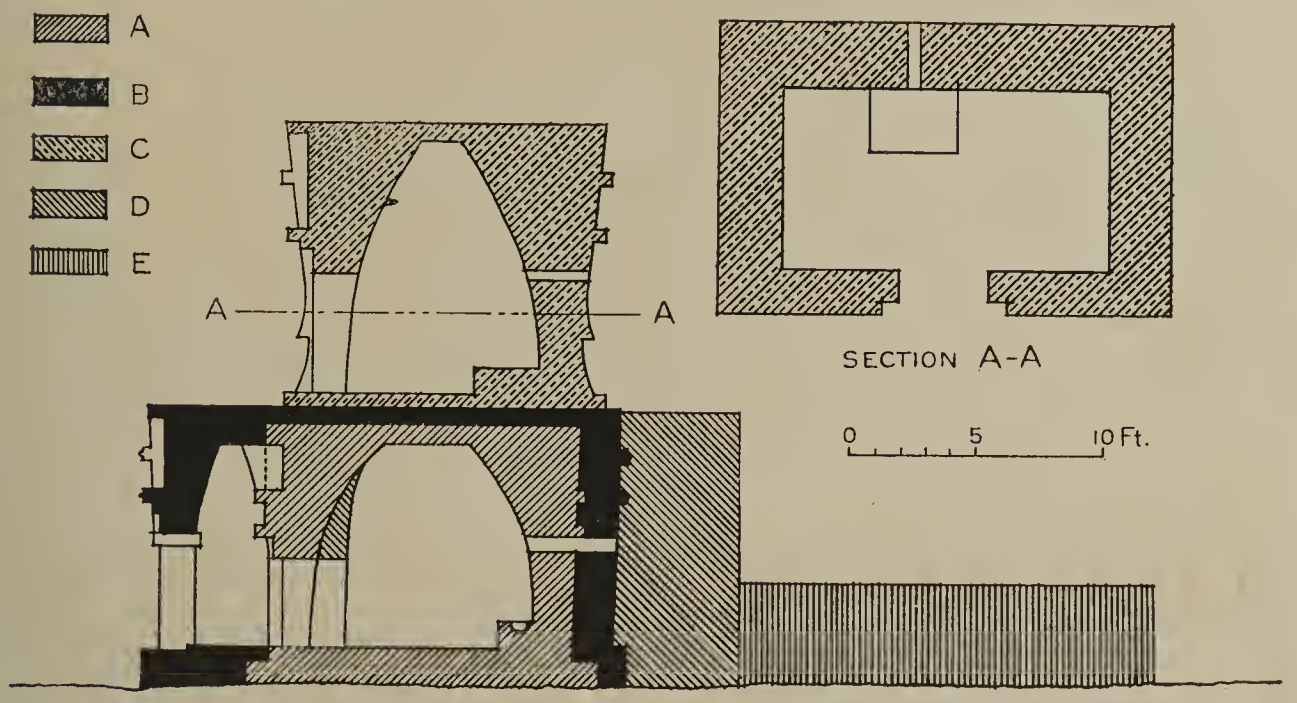


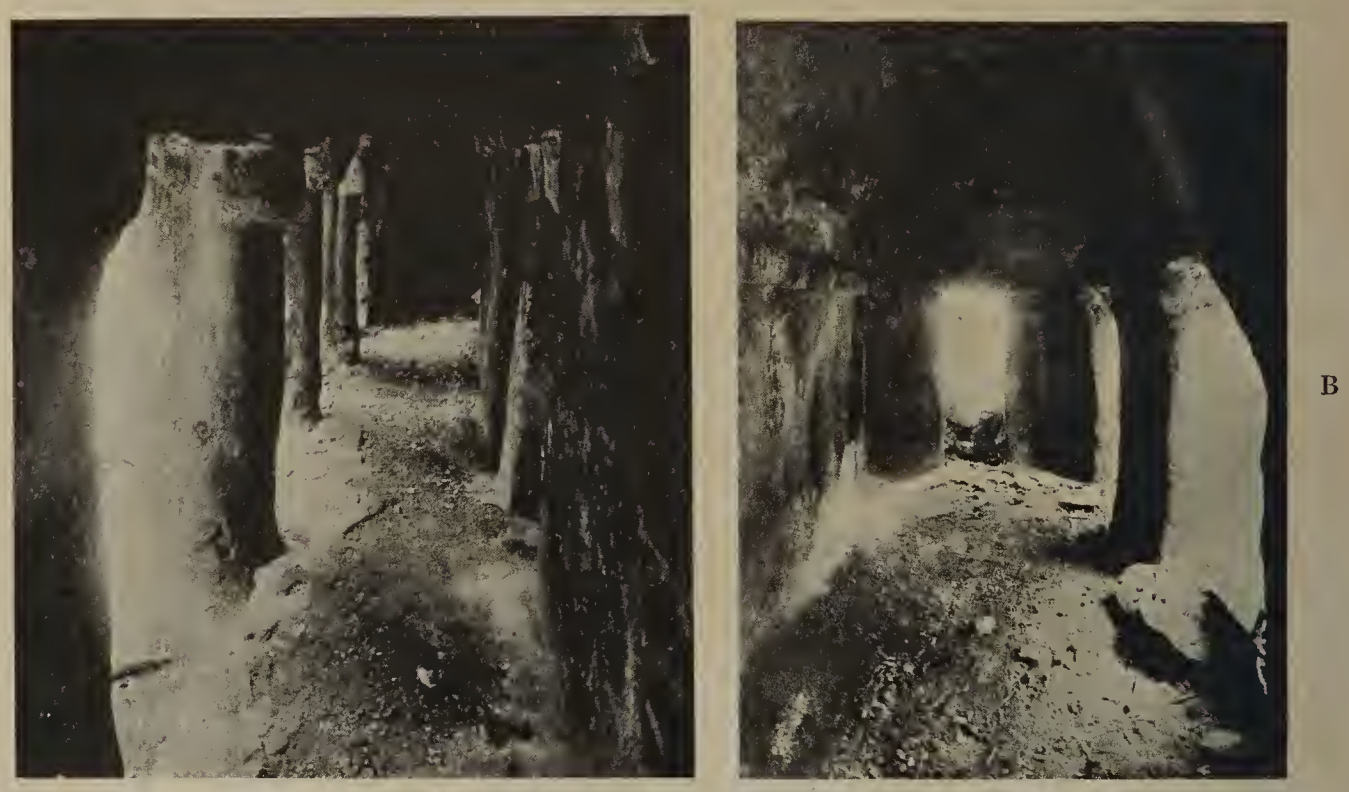
FIG. 71.—Cross-section, Temple of the Frescoes, Tulum.

FIG. 72.—Temple of the Frescoes, Tulum: A, north corridor; B, inner doorway.

all covered with frescoes, which have had an unusual opportunity to survive because they are protected from the weather by the surrounding portico. Those remaining to-day in the west corridor are shown on plate 7. This building probably

reveals the splendor of Maya architecture in its pristine state better than any other edifice yet discovered. The moldings are decorated by rosettes interspaced with colored chevrons. Between the moldings is a series of deities and conventionalized serpents. Below the moldings the wall is divided into bands by the bodies of intertwined conventionalized serpents adorned with flowers, seed-pods, and elaborate knots. In these bands are various celestial beings in the act of making offerings. At the bottom is a panel representing water in which fish are swimming. The whole effect is rich, and the black background serves to make the individual figures stand out sharply. The religious and artistic bearing of this painting we have previously discussed.

The south corridor (fig. 73, B) is wider and better lighted than the western. Its inner wall is also adorned with frescoes, which are more faded than those we have reproduced. They are not so far gone that they could not be traced if the



A B

FIG. 73.—Temple of the Frescoes, Tulum: A, west corridor; B, south corridor.

paint were brought out by some liquid, though we do not envy anyone the task. The north corridor (fig. 72, A) is well lighted, owing to the partial collapse of the vault. At the extreme west end, separated by a conventional serpent-band, are two painted deities, the upper of which we illustrate on plate 8. It is worthy of note that the north wall of the Temple of the Diving God has two similar superimposed figures at the west end.

The exterior of the Temple of the Frescoes is as richly decorated in stucco as is the interior in painting. The principal entrance, on the west side, is divided by four round columns, above which is a long, sunken panel. This panel contains many imprints of the Red Hand, spaced about a foot apart. The moldings, two in number, are of the rectangular terraced variety and are adorned with numerous

Tulum. A, Inner Inclosure; B, Temple of the Frescoes.

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rosettes in stucco. Above the entrance are three vertical niches which contain battered stucco deities in high relief (plate 2, B and D, and plate 3, B). The lateral pair are standing figures fringed by the feathers of elaborate head-dresses. The central niche contains the image of the ever-present Diving god. The head and body have been broken away, but the legs, wings, and tail are still well preserved and bear traces of orange, red, and black paint. The grouping—the Diving god flanked by standing figures—is also found on the upper range of the Castillo and may be of special religious significance. Between the moldings and between the niches on the west façade are two low-relief groups of an uncommon type (plate 3, C, D). They each represent a human figure involved in loops. They are too badly battered for the details of the composition to be clear.

The north and southwest corners are covered by gigantic faces in low relief (fig. 24). The mouth and chin come in the lower mural zone; the nose and eye fill the intermolding space; the eye-plate and head-dress occupy the upper zone. The whole face was once painted orange, red, and black. The general conception is that of a god, with attributes of the feathered serpent, who may be tentatively identified as Kukulcan, the Lord of the Winds. It may be compared to the mask-panels so common in central Yucatan.

The upper story is built directly over the inner room. It differs so much in style from the lower building that there is little doubt that it was erected at a different epoch. The curious projection of the walls finds an exact parallel at Cancuen (fig. 159), but is not seen elsewhere on the east coast. The batter at the base of the walls and also the sunken door-frame strongly suggest Mexican influence and may be compared with various buildings at Chichen Itza or Mitla. The prolongation of the sunken panel over the door and the vertical niche with its traces of a stucco figure are characteristic of the locality. The interior contains a single vaulted room. There are stone pegs high above the door in the west wall. Opposite the door is an altar with a small window above it.

The means of ascent to the second story have puzzled the writer for some time. The illustration published by Stephens shows two masonry piers at the south end of the building. They were examined with care in 1922, and, as can be seen from the accompanying photographs (fig. 74), it is evident that the usual masonry stairs could not have existed without leaving more débris. It is therefore probable that the ascent was by means of wooden steps which apparently cut through the cornice. These steps may have come down to a landing on the now crumbled masonry piers and then branched, like the stairs on the Great Wall, but it is more probable that they proceeded directly to the ground, as indicated in figure 70.

The platform mound at the back (east) of the Temple of the Frescoes is also a puzzling feature. Part of it can be seen in figure 74, B. It is evident that the building proper has encroached upon it, because of the unsymmetrical position of the stairs. It is our belief that platform mounds supported buildings of relatively perishable materials, although we can not solve the question of what once may have stood here.

Stephens states that in his day, on top of the platform mound, were

"two stone tablets with rounded surfaces, six feet six inches high, two feet four inches wide, and eight inches thick, having upon them worn and indistinct traces of sculpture."

These we did not discover, nor did Howe in 1911, but we did find a stone slab covered with painted plaster (stela 4), which on one side of the monument was nearly 1 inch deep. The left half was painted blue and the right half white.

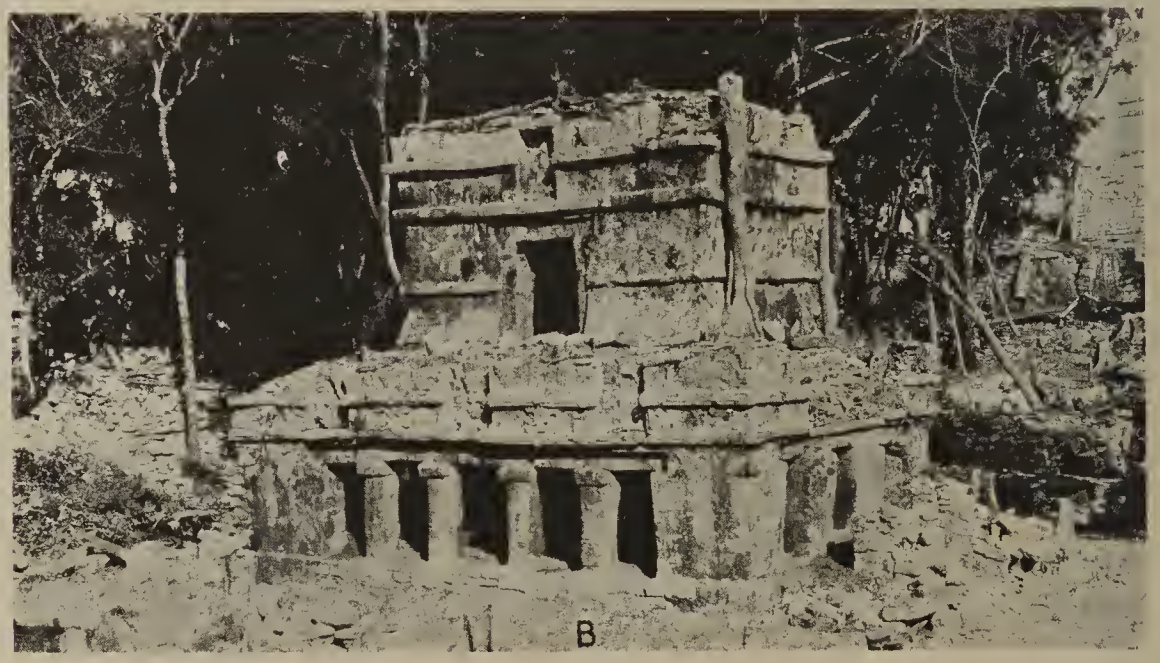

FIG. 74.—Temple of the Frescoes, Tulum: A, south façade; B, southwest corner.

The dimensions are: length 5 feet, width 2 feet 1 inch, thickness 8 inches. The thickness is the only measurement in common with the dimensions given by Stephens, and there is no doubt that stela 4 is not one of the slabs described by him.

Structure No. 17.—Immediately east of the platform mound attached to the Temple of the Frescoes is another platform mound. The correspondence of these two is so exact that they evidently belonged together, for almost the only difference is in the stairways. Structure 17 is 4 feet high and 17 feet square.

Structure No. 18.—A small altar, 4 feet square and 2 feet high, lies 17 feet north of structure 17 and directly in front of the steps of structure 21, with which it probably belongs.

Structure No. 19.—This is a platform mound which stands on the west side of the principal street, just south of structure 20. The two present a continuous front line to the street and are separated by a passage 8 feet wide. Structure 19 is 39 feet long, 34 feet wide, and 3 feet high. It is ascended by five steps on the eastern side. The most interesting feature of this mound is a cruciform tomb which was disclosed by a large tree growing out of its center. The masonry walls of the tomb are vertical and the floor is polished cement. The roof was made of long stone slabs. Both the floor and ceiling of the north and south arms are lower than those of the east and west arms. In this depression the body had been placed, but the position could not be determined, as the bones were fragmentary and had been disrupted by the growth of the tree. With the burial were found broken pottery and animal bones. The latter are probably the remains of food placed in the grave to provide the soul on its journey and are of some interest as indicating the diet of aboriginal times. Dr. Glover M. Allen, of Harvard University, has kindly identified these bones for me, as follows:

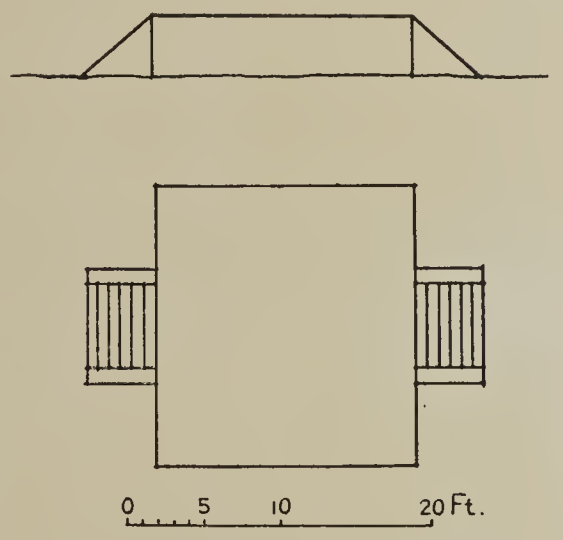

FIG. 75.—Plan and elevation, structure 17, Tulum.

Fish: Large shark; catfish (*ramdia*).
Reptiles: Small iguana (*Ctenosaura acanthiura*); alligator.
Birds: Large pigeon, perhaps the whitehead (*Columba leucocephala*); ocellated turkey (*Agriocharis ocellata*) or Mexican turkey (*Meleagris*); large heron.
Mammals: Yucatan white-lipped peccary (*Tayassu pecari ringens*).
Miscellaneous: Fragments of a large mollusk or conch.

Structure No. 20.—This is a building of the palace type, which stands on the opposite side of the main street from the Temple of the Frescoes (plate 21, B). The substructure is 4 feet high. On the east side is a flight of eight steps, flanked by wide balustrades, leading to a platform in front of the main entrance. This consists of three doorways divided by round columns with square capitals. Over each opening run two large wooden beams, a total of six beams. The outer timbers are set back from the face of the wall to form the customary sunken panel, which is separated from the lower bands of the molding by half a foot. This is the only example at Tulum of a palace doorway divided by columns which is still intact. Our observations led us to believe that those that have now fallen were similar to it, and other façades have been restored on this basis for illustrative purposes.

Over the central opening in the east façade is a niche containing a stucco figure so badly battered that little remains beyond the stone skeleton (fig. 23, A). From the position of the head and the broken arm on each side we judge that the whole was once the customary Diving god, whose worship evidently assumed great importance at Tulum.

The eastern room (A on fig. 77) is 42 feet long and 10 feet wide. The main wooden beams which once supported the roof ran east and west. On each side of the doorway in the eastern wall are remnants of stone rings. In the north and south walls are rectangular windows. In the west end of the north wall is a crude stucco head (fig. 79). All of the walls were covered with frescoes painted in red and black, which have been covered with a subsequent layer of plaster, but which might be recovered by careful peeling of the overlying stratum. In the west wall is a doorway, with a lintel of two timbers, which leads to room B. Over this door-

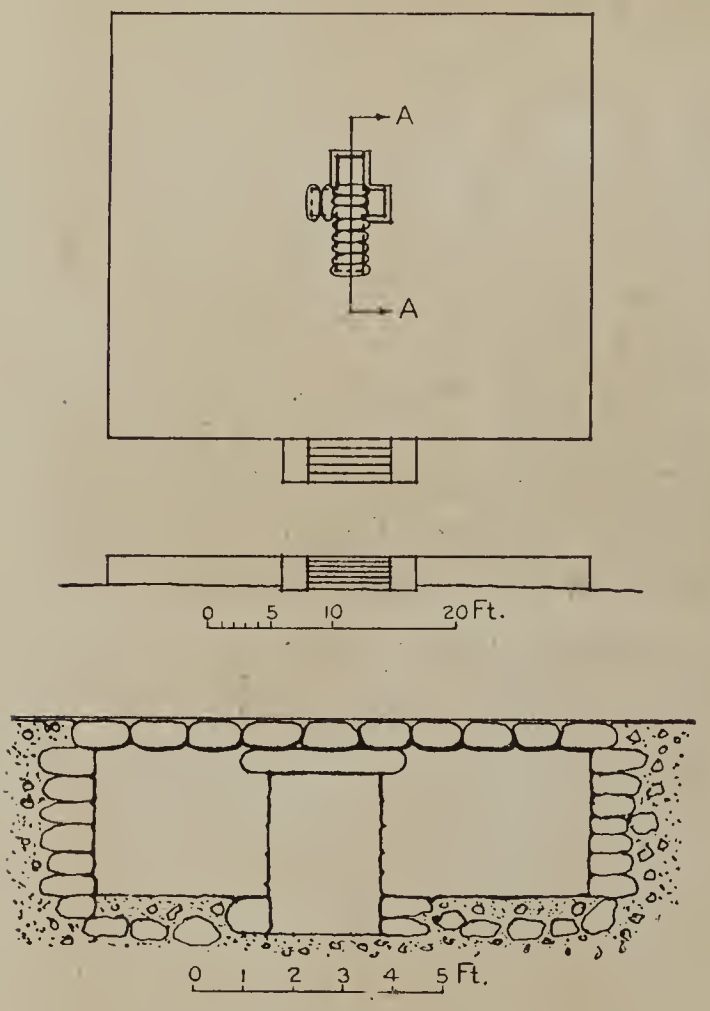

Fig. 76.—Structure 19 and cross-section of tomb, Tulum.

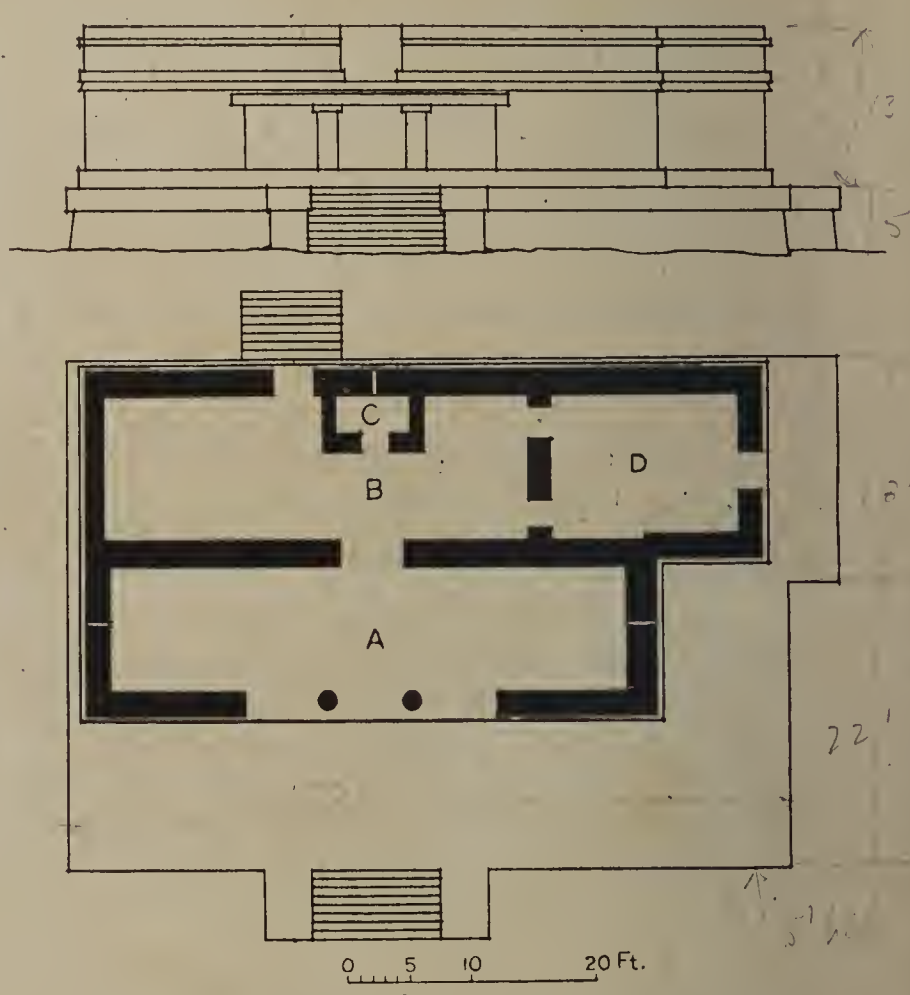

Fig. 77.—East elevation and ground-plan of structure 20, Tulum.

way is another representation of the Diving god, again so badly battered as to be scarcely recognizable (fig. 23, B).

Room B is 33 feet long and 11.5 feet wide; its walls are undecorated. In the center of the back wall is a sanctuary, just south of which is a narrow door opening above steps which lead to the ground. There is a sunken panel over this door on the outer side. The sanctuary (C) has a molding consisting of a rectangular and triangular member on the three walls facing room B. There is a window in the back (west) wall. No decoration except the molding is present on any wall. The floor is deeply covered with débris.

In the north end of room B are two doors, separated by a masonry pier, which lead to room D. This chamber is evidently a later construction, for the wall be-

Tulum. A, structure 21; B, structure 20.

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tween it and room B makes the latter unsymmetrical; also, room D stands on a prolongation which breaks the line of the main substructure; finally, the junction between the old and the new construction is plainly visible. The point is of some importance, because we shall see that practically all palaces represent more than

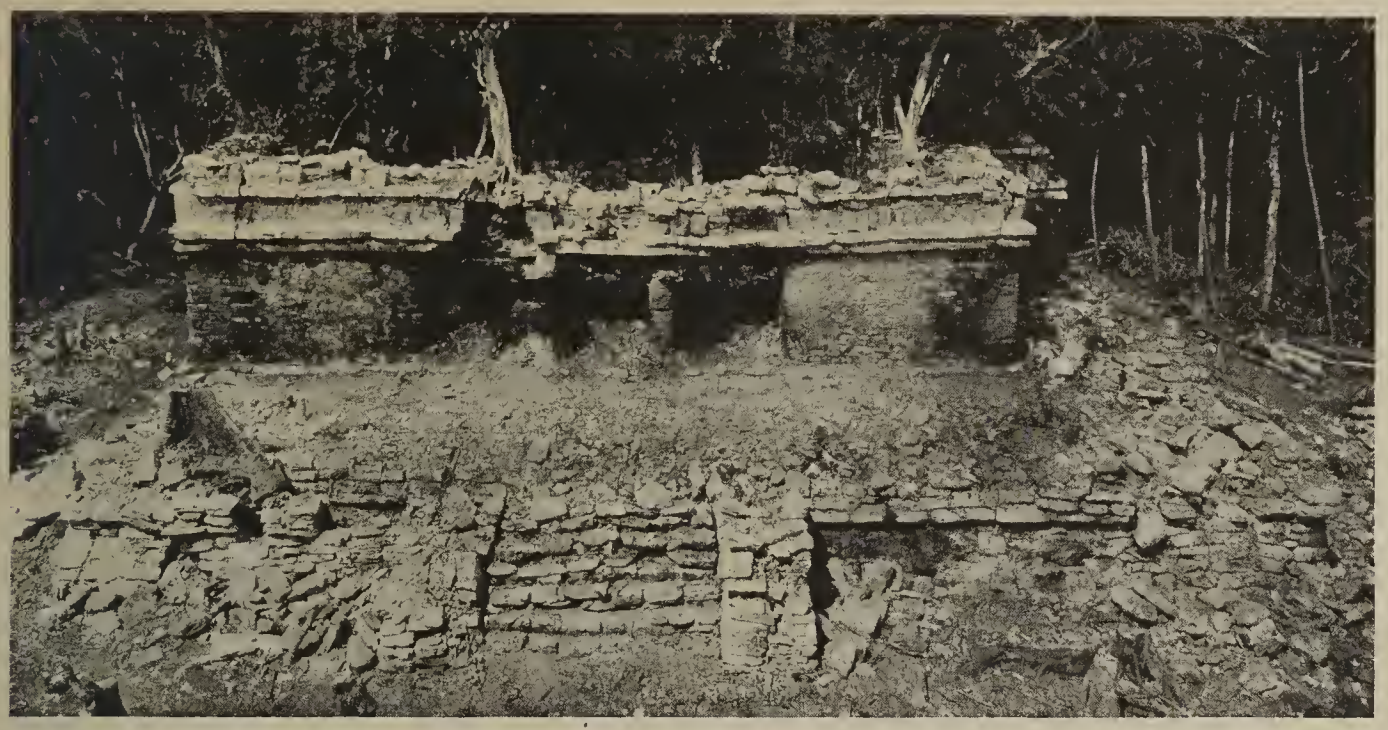


FIG. 78.—East façade of structure 20, Tulum.

one period of construction, and therefore they and the corresponding architectural features must have existed for a considerable time before the abandonment of the city. Room D was made by knocking out the north wall of room B, shortening the latter by 9 feet, and adding a wing 7 feet long to the northward, thus forming a room 14 feet long. In the north wall of room D is a door giving access to the extension of the terrace.

Structure No. 21.—A large flat-ceiling palace stands north of the Temple of the Frescoes and runs from the main street towards the west side of the Inner Inclosure. Its general shape is like the letter L, with the principal axis running east and west and the main entrance facing south. The building stands on a low substructure surrounded by a massive cornice. This substructure and the wing are ascended by short flights of stairs on the south and east sides, respectively. The main entrance is 35 feet wide and is divided by four columns which have fallen, carrying away the wall and ceiling which they supported. The east and west ends have both fallen outward. Geometric panels between the moldings (seen on figure 80) are present on the north and south walls and probably completely encircled the edifice.

FIG. 79.—Stucco head in room A, structure 20, Tulum.

The outer chamber (A) is 58 feet long and 15 feet wide; it is the largest room at Tulum and, indeed, resembles a portico rather than a room.[1] Down the center of the long axis runs a line of seven columns. These columns were capped by short masonry piers which supported the main roof-timbers. Naturally the collapse of the roof destroyed the majority of these piers, but one still in position can be seen on plate 20, A. A cross-section of structure 21 and a restoration of the roof are shown on figure 12.

On either side of the main entrance stone rings are set in the wall. The three windows in the north wall are all of interest. The lateral pairs have stone pegs on each side for supporting curtains, a common feature in connection with

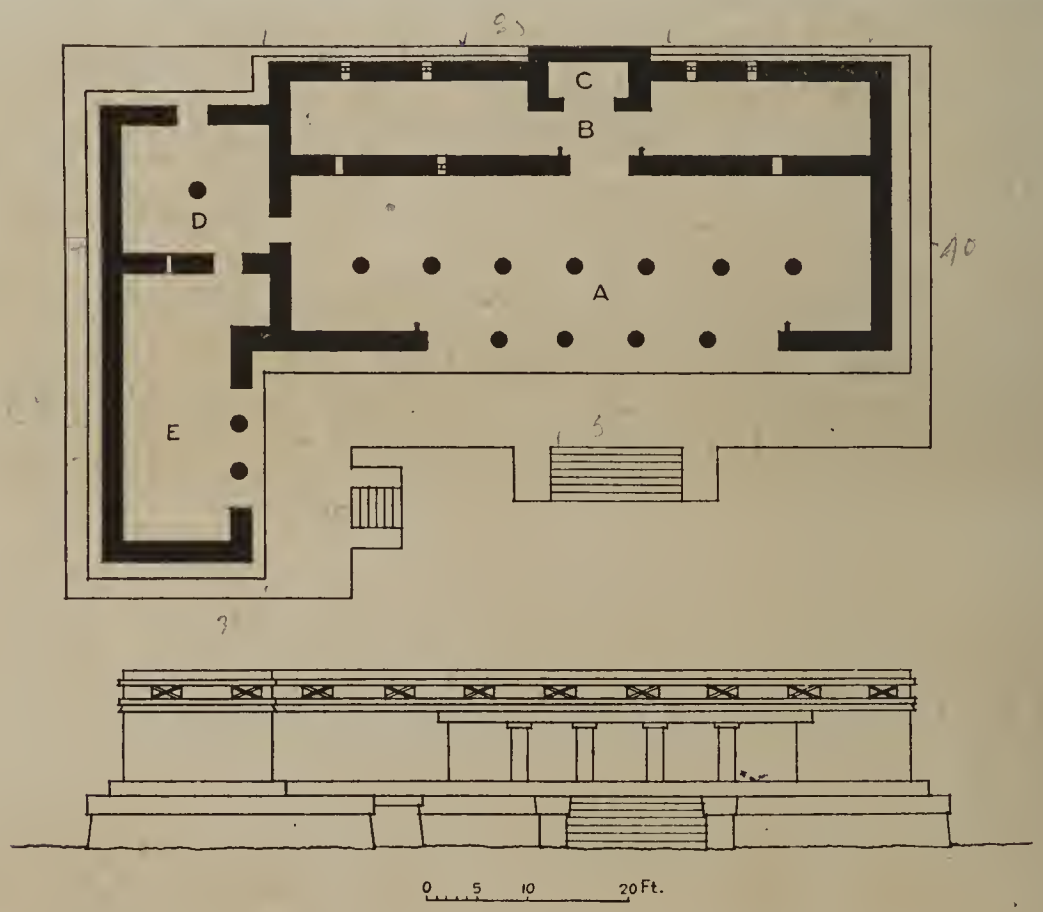


Fig. 80.—Ground-plan and south elevation of structure 21, Tulum.

doors, but not elsewhere observed with windows; the central window has a simple stone lattice in it (fig. 7). This embellishment, which is also found in the rear windows of room B, is designed to harmonize with the geometric panels on the exterior. Its presence is possible only because the windows are larger than usual. All four walls of room A are painted red, with a broad blue band just below the ceiling. There is no evidence of frescoes.

Room B is entered by a single doorway from room A, on each side of which are stone rings. It is without interest save for the sanctuary (C), which is unusual, because it is not built against the back wall but projects through it, as seen on figure 80. The roof was supported by four north-and-south beams which were set in pairs.

[1] Before rooms C and E of the Castillo were separated to form the third range they were parts of a single chamber which measured 80 feet long and 19.5 feet wide.

The part of the building thus far described is apparently earlier than the wing containing rooms D and E, although there is no stylistic difference, except that the sunken door-panel is *against* the molding outside of room A and *below* it outside of

FIG. 81.—Structures 16, 20, and 21, from the Inner Inclosure.

FIG. 82.—View of south façade from room E, structure 21, Tulum.

room E. This wing communicates with the original construction by a door between rooms A and D. The latter is square and has a single column in the center. The west wall has fallen, as has that of room E. In the north wall, leading to a small

terrace, is a narrow door flanked by stone rings. In the south wall is a door and a window opening into room E. This chamber is featureless, except for stone rings on either side of a door in the east wall. From this door a fine view is obtained along the south façade of the building, with the Inner Inclosure and the Castillo in the background (fig. 82).

Structure No. 22.—This is a platform mound 43 feet long, 9 feet wide, and 1 foot high. It runs along the western edge of the terrace in front of structure 25, and the north end rests against the substructure of that edifice. The southern end overlooks the side of the terrace, where a stairway leads up from the principal street. Along the western edge of the mound is a wall 1 foot high and 2 feet broad. The drop from the top of this wall to the street is 6 feet, including the height of the terrace.

FIG. 83.—Tomb in south end of structure 22, Tulum.

In the north and south ends of the mound we discovered two vaulted tombs. The one in the northern end (fig. 84) had a very neatly made vault, with an offset on each side at the base. The tomb was partly dug out, yielding a few fragments of pottery. At the south end was a tomb with a half-vault built against a vertical wall (fig. 83).

Structure No. 23.—Directly in front of the main entrance of structure 25 and on the south edge of the terrace is a small stone platform 4 feet high. It is encircled by a broad rectangular cornice. On the north side are steps. On the southern edge is a wall now 2 feet high, but once perhaps a little higher. This mound belongs to a class which is apparently peculiar to the east coast. We saw other examples of platform mounds with a wall running along one edge—structures 22 and 29—in the immediate vicinity of this one, but formed no opinion as to their function, except that they all probably contain vaulted tombs.

Structure No. 24.—At the east end of structure 25 is a tiny platform mound—perhaps we should say altar. It consists of a mass of masonry 5 feet square and 3 feet high. It is ascended by four steps on the east side.

Structure No. 25.—This large palace adjoins the east side of the principal street, but faces southward on to a terrace. The substructure is 80 feet long and 50 feet wide. Its east and west ends have been reinforced by a retaining-wall

which varies in thickness from 1 to 3 feet. The presence of this wall is disclosed by failure of the masonry and may be seen in figures 84 and 85. The northeast and southwest corners of the substructure are rounded, but the other corners are

FIG. 84.—West side of structure 25 and north end of structure 22, Tulum.

FIG. 85.—Structure 25 from the northwest, Tulum.

square. On the south side, in front of the principal entrance, is a stairway flanked by massive balustrades. The entrance itself, 46 feet wide, was completely demolished by the falling of the rubble roof. It probably contained six columns and also three stucco figures in niches. There is a niche on the west façade which contained

such a figure, although now only stone pegs remain to indicate what was once there. Others probably existed over the fallen north and east doorways. The lower molding, and probably the upper as well, was decorated with stucco rosettes like those on the Temple of the Frescoes.

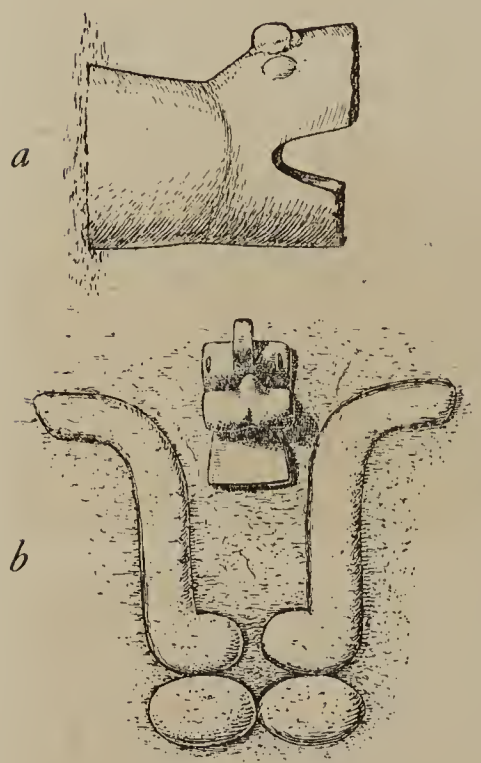
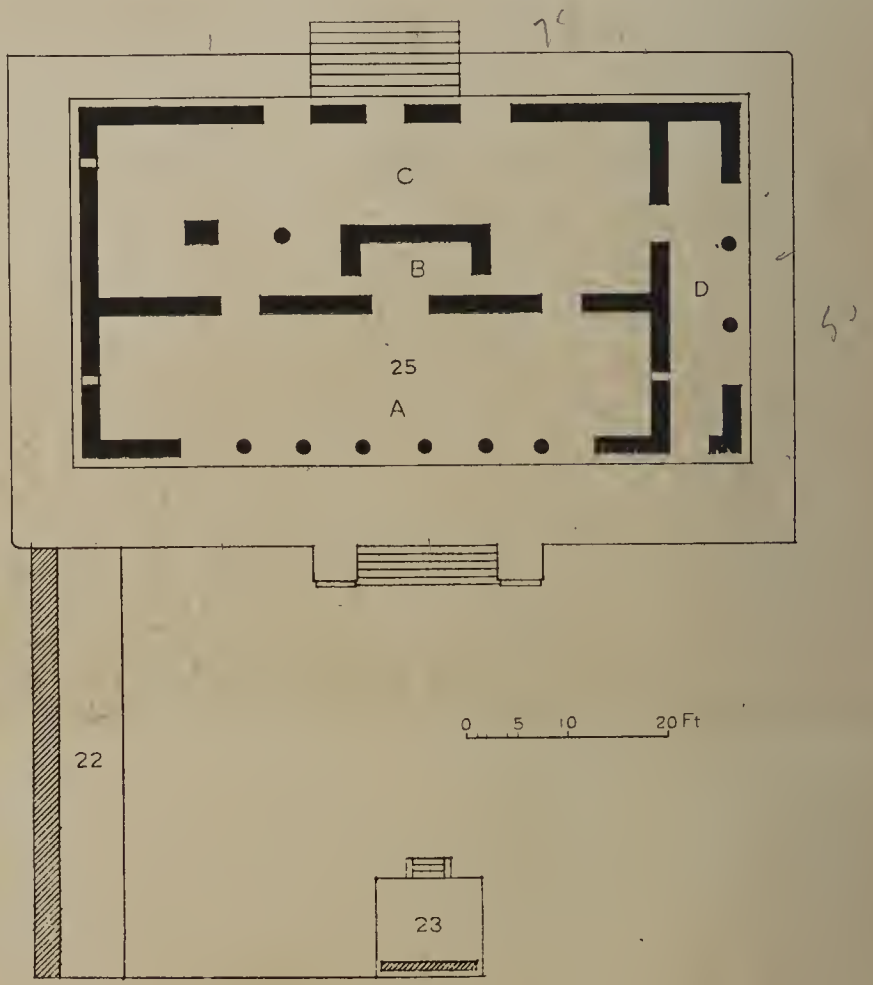


Fig. 86.—Structure 25, Tulum. Stucco heads: *a*, east wall; *b*, south wall; *c*, altar near north steps.



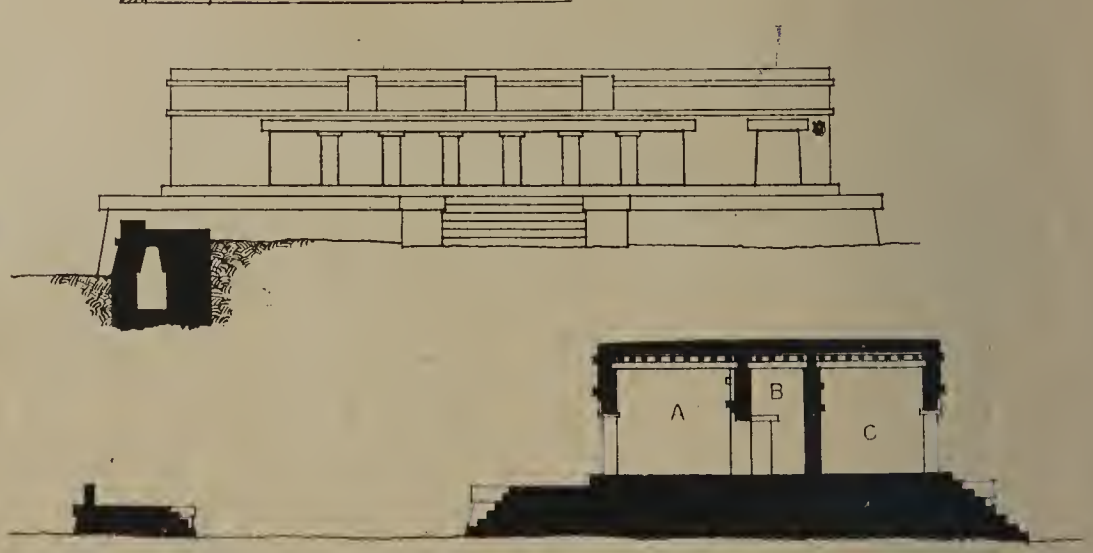


Fig. 87.—Ground-plan and restored cross-section and elevation of structure 25, Tulum.

The principal entrance leads to a room (A in fig. 87) 56 feet long, with a window in the east and west walls. In the north wall are three doors. The lateral pair leads to room C, while the central door enters the sanctuary (B), which is built against the front instead of the back wall of room C. The wall about this central doorway has been made to resemble the façade of a small temple. The ends of this temple are indicated by raised ridges of plaster. The door itself is outlined

Tulum. A, structures 23, 25, and 26; B, looking south along the main street from structure 32.

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STUCCO FIGURE OF THE DIVING GOD.
STRUCTURE 25, TULUM.

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in red paint and has the usual sunken panel above it. Over this are two rectangular moldings and a niche containing the finest stucco figure in the city. Between and

FIG. 88.—Interior doorway, structure 25, Tulum.

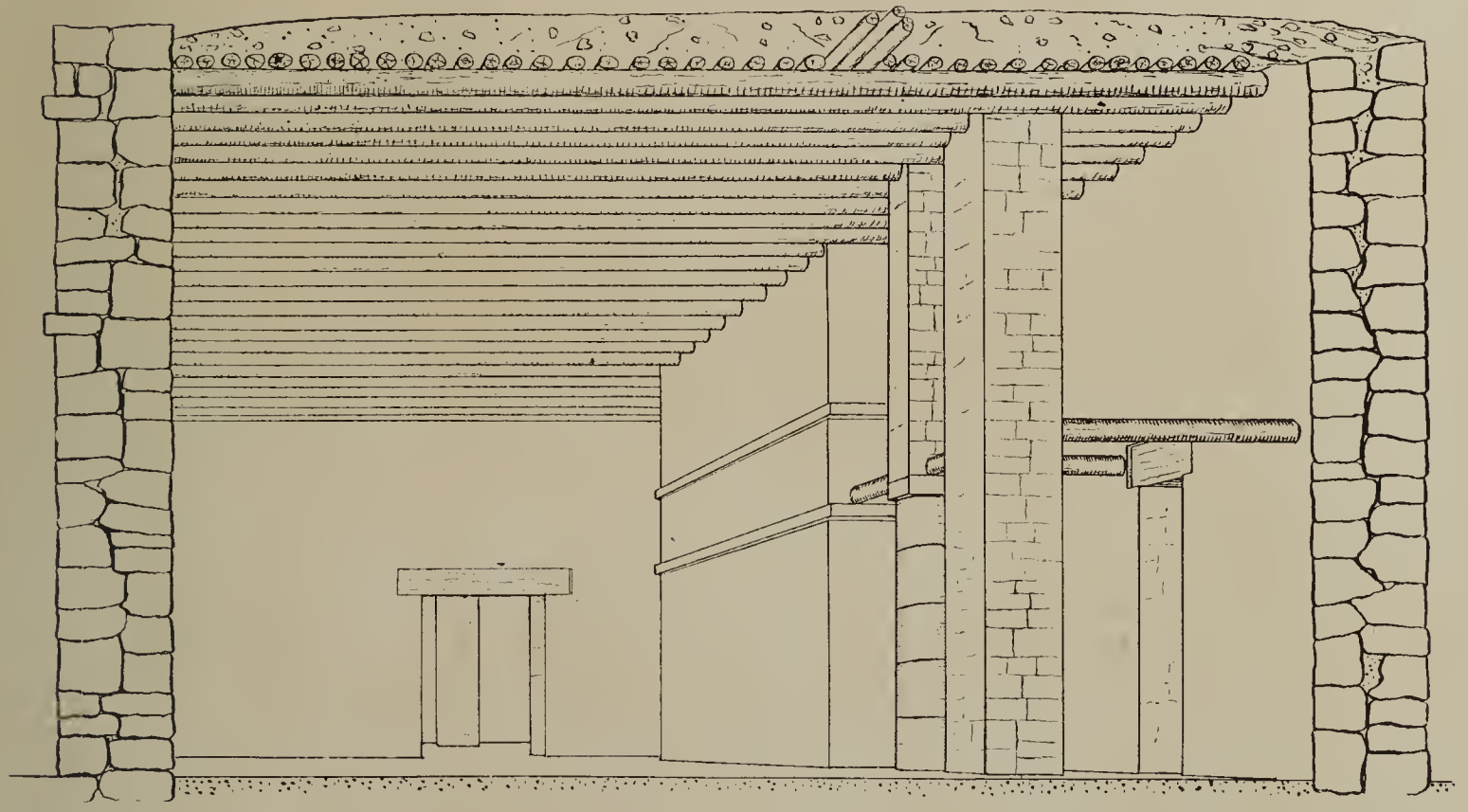

FIG. 89.—Supplementary columns and sanctuary in the back room of structure 25, Tulum. (Restored.)

above the moldings the wall is covered with frescoes which run right up to the roof beams. The stucco figure represents the Diving god in unusually elaborate guise (plate 23), with still brilliant color over a good part of the surface. The false

façade here described really serves as a façade for the sanctuary, although the two do not fit exactly.

The sanctuary (room B) is 11 feet long and 5 feet wide, with walls rising to the full height of the building. The ceiling has two major beams running north and south. On the exterior walls of both room A and room E there are rectangular moldings. Two doors lead from the sanctuary to room C; the eastern door has a lintel of two wooden beams, while the western lintel is of stone.

Room C is 17 feet wide, the widest room without columns at Tulum, or, in fact, anywhere on the east coast. That the wooden beams started to collapse before the abandonment of the city is attested by the fact that a round column and a masonry pier were introduced on a line with the back wall of the sanctuary. At present both of these are the height of the lower molding of the sanctuary, and at this height they were braced to each other and the walls by means of wooden beams (fig. 89).

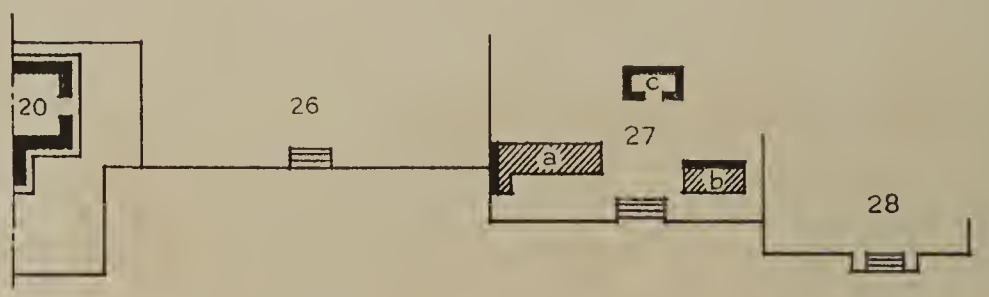

Fig. 90.—Structures 26, 27, and 28, Tulum.

In the north wall of room C are three doors, separated by piers, which open directly on a stairway. This stairway descends to the ground, cutting through the edge of the substructure. At the foot of the stairs is a small round altar with traces of carving on it (fig. 86, *c*). At the east end of room C is another door, which leads to room D, which is 31 feet long and 5 feet wide. The beams of this room run east and west. In the east wall is a doorway 26 feet wide, which probably contained two columns. There is also a door in the south wall which opens on the principal façade.

Structures Nos. 26 to 32.—These structures are all platform mounds on the western side of the main street, between structure 20 and the northwest gateway in the Great Wall. They all present vertical faces to the main street, but on the west they merge with the ground, which here slopes upward to the west arm of the wall. Structure 26 joins the base of 20 on the south and 27 on the north. The latter supports a small shrine, to-day badly ruined. On each side of the stair are two low masonry platforms. Along one edge of these platforms runs a stone wall, like

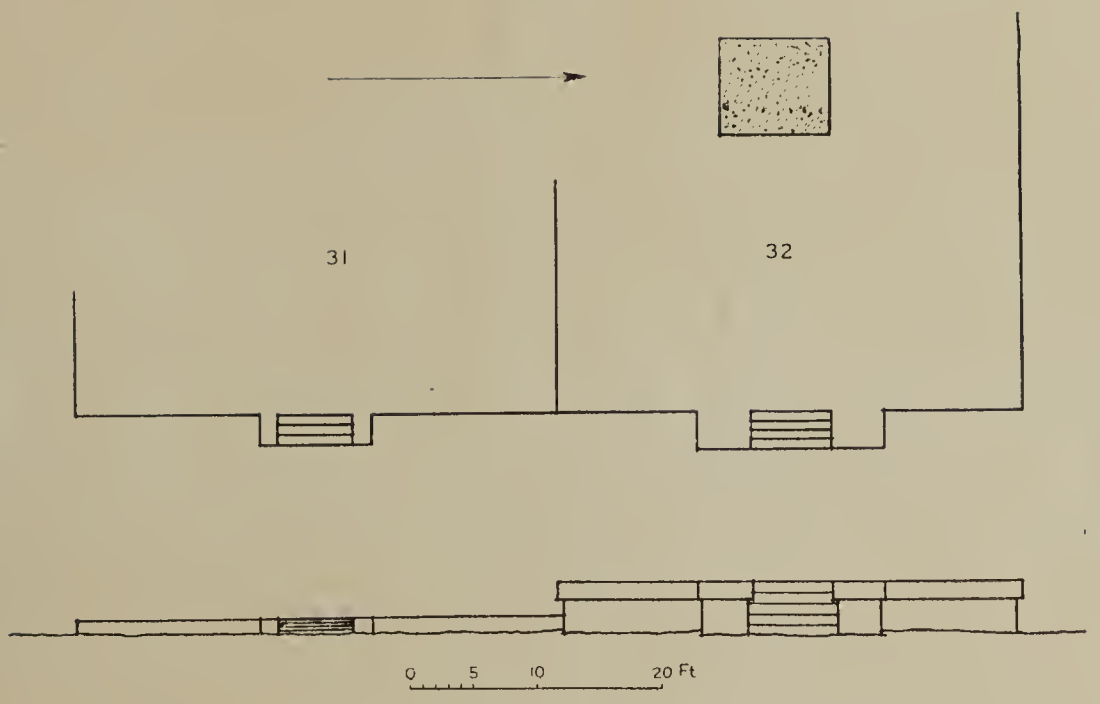

FIG. 91.—Structures 31 and 32, Tulum.

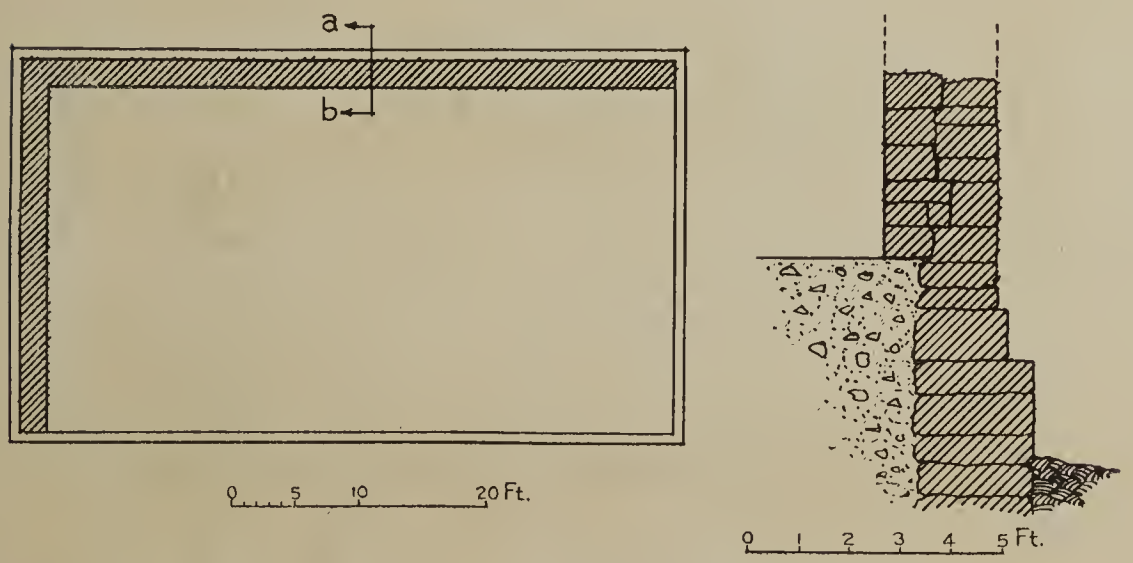

FIG. 92.—Structure 33, Tulum.

FIG. 93.—Structure 34 from the southwest, Tulum.

the walls already described on structures 22 and 23 and also found on 34 and 50. Structure 28 is featureless, save for a stairway. The three platform mounds described all stand opposite the west end of palace 21.

Across the street from palace 25 stands structure 29, which is 36 feet long and 3 feet high. There are four steps leading to the street. North of this is 30, a long, low platform about 1 foot high.

Structures 31 and 32 stand across the street from palace 34. The former has no traces of construction on the summit, but 32 has a badly ruined shrine set well towards the back, in line with the stairway.

Structure No. 33.—This structure stands south of palace 34, on the east side of the main street. It is the largest of the platform mounds and, like others already described, has a parapet along two edges. Mound 33 is over 50 feet long. The

FIG. 94.—East façade of the Cenote House and altar 36, Tulum.

parapet along the north edge is well marked and is clearly visible on plate 22, B. The western edge apparently also had a parapet, but there was none on the east and south sides. The height of the parapet on the north above the summit of the mound is 3.5 feet, but formerly was probably about 5 feet. No traces of a stairway were seen, but one probably existed on the south or east side.

Structure No. 34.—This palace stands on the east side of the north end of the main street, near the northwest gateway in the Great Wall. Two views on plate 22, B, and figure 93 show its location in relation to the wall and the buildings to the south. The principal façade faces westward. It is marked by a stairway with balustrades, three doors divided by columns, a sunken panel over the door, and two moldings (fig. 95). The rubble roof supported by wooden beams appears to have been very thick, and there is an unusual mass of débris on the floor. A section of the rubble which fell without breaking is seen in figure 13. The outer room to-day contains nothing of interest. In the back room is a sanctuary of the usual type. In the

back wall south of the sanctuary is a narrow door opening on an extension of the substructure, whence a stair leads to the ground.

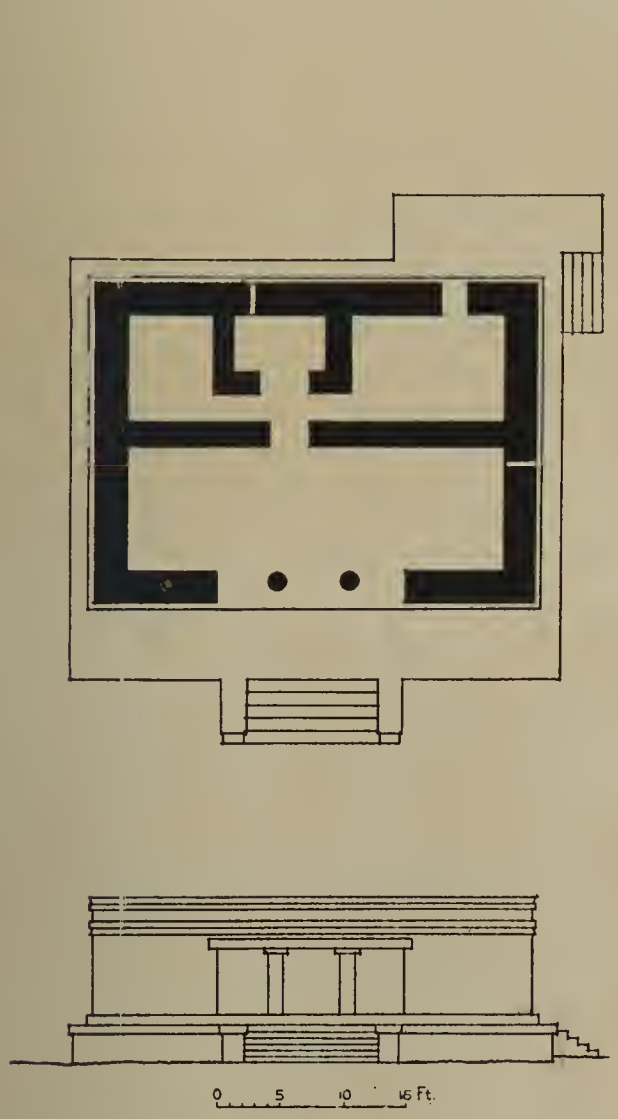

Fig. 95.—Plans of structure 34, Tulum.

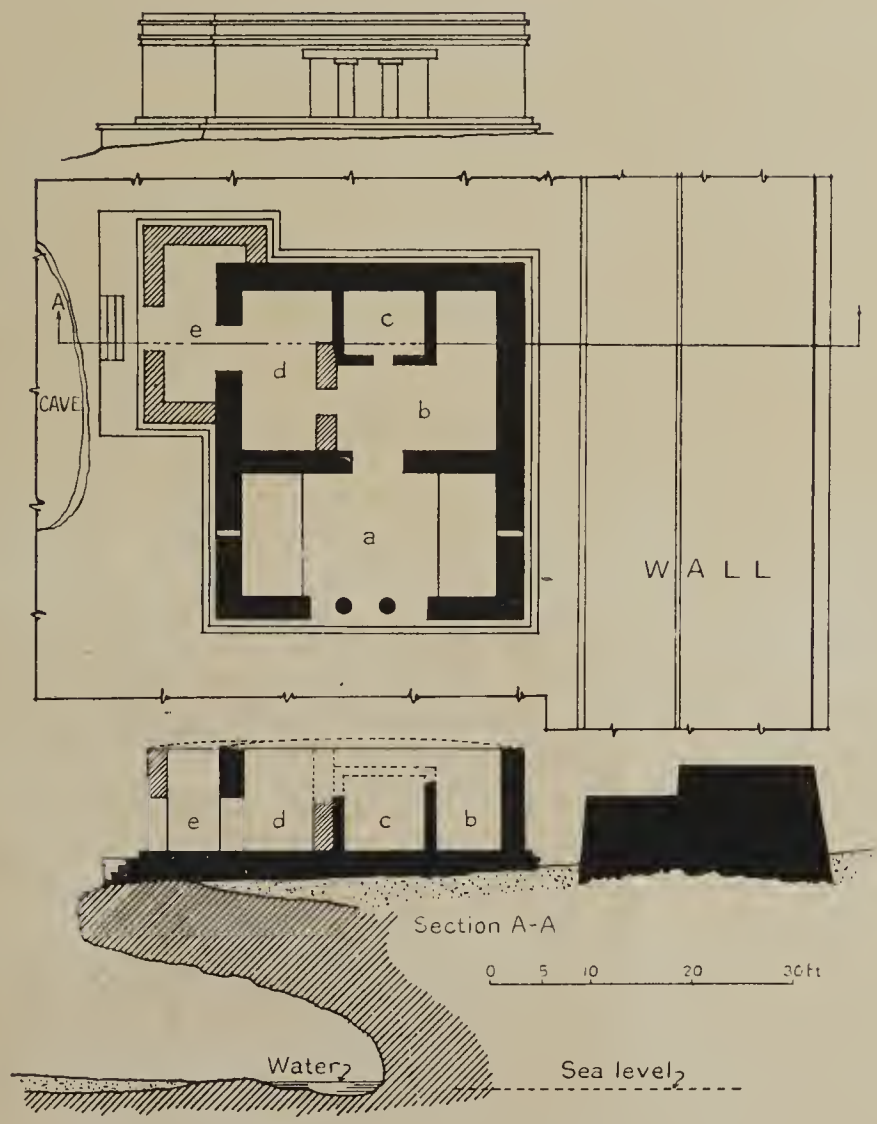

Fig. 96.—Plans of the Cenote House, Tulum.

The Cenote House (Structure No. 35).—The word *cenote* is used in Yucatan to denote a limestone cave which contains water. In a country almost devoid of rivers these caverns are of the greatest importance, as they form the only water-supply. At Tulum there is a small cenote near the northeastern gateway in the Great Wall. The water is evidently supplied by surface drainage from a funnel-shaped area of two or three acres, which slopes gently downward to the mouth of a limestone cave. At the back of the cave is a small pool of brackish water, foul with bat-dung, but still drinkable. The roof of the cave (plate 24, A) is a natural limestone arch, and on this arch rests one corner of structure 35, which we have named the Cenote House, a small building of the palace type.

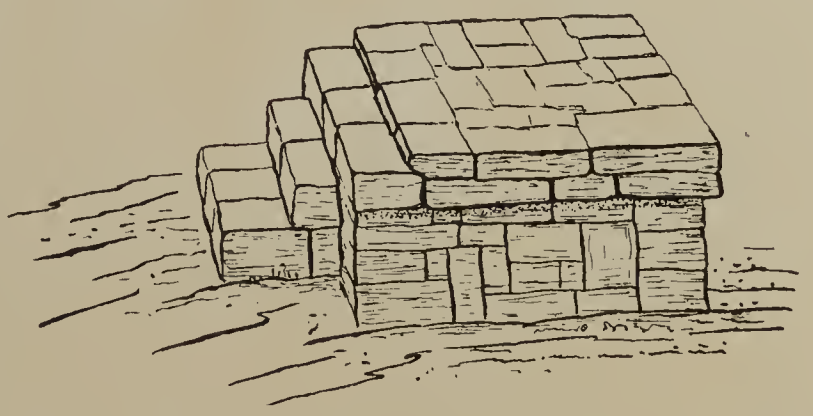

Fig. 97.—Structure 36, Tulum.

The principal façade of the Cenote House faces away from the cenote and towards the sea, near the northeastern passage in the Great Wall. The doorway apparently contained two columns, with the usual sunken panel. Among the débris in front of the building we found a crude stone figure representing an unknown animal. This doubtless was once finished in plaster and was one of several placed along the edge of the roof.

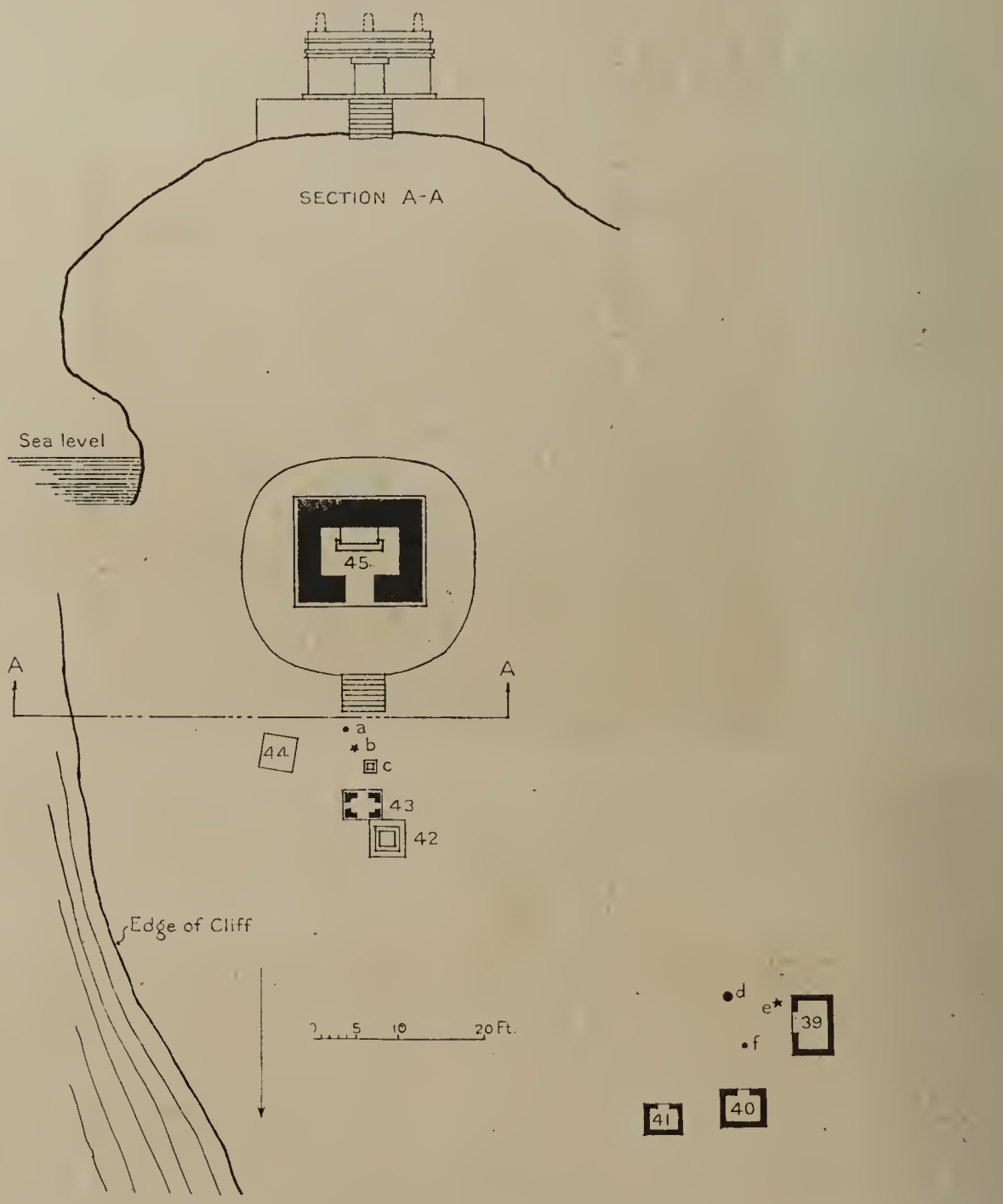

FIG. 98.—Structures 39 to 45, Tulum.

The plans of this edifice indicate two periods of construction (fig. 96). The first period saw the erection of a building of the usual palace type, consisting of two large rooms with a sanctuary built against the back wall of the inner room. A second constructional phase created an L-shaped wing over the roof of the cenote (room *e*) and divided the original back room into two parts (rooms *b* and *d*).

From room *e* a door opens on a small platform, whence steps lead to the ground at one corner of the cenote roof (plate 24, A). A second set of steps, at

A, Cenote House, Tulum. B, structure 1, Tancah.

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right angles to the others, descends the wall of the gully to the level of the floor of the cave.

Structure No. 36.—In front of the Cenote House is a small square mound like 24. It is surrounded by a rectangular cornice and ascended by steps on the west side. It doubtless served as an altar.

Structures Nos. 37 and 38.—To the south of structure 36 are two small, crude platform mounds. The western edge is about 1 foot high, and on the east they join the slope from the gully in front of the cenote to the crest of the sea-cliff.

FIG. 99.—Structures 39, 40, 41, and 35, Tulum.

Structures Nos. 39, 40, and 41.—A short distance northwest of temple 45 is a group of three shrines. The assemblage and ground plans of these are given on figure 98 and the front elevations on figure 101. These shrines all have a

FIG. 100.—Structures 42 to 45, Tulum.

single door with a sunken panel over it and a crudely vaulted interior. Two of them face south and one eastward. The south wall of 40 (fig. 99) is partly composed of a carved fragment broken from a stela (fig. 19). In front of the shrines are various objects, which are located in figure 98. Two of these are phalli (fig. 99), a

subject portrayed elsewhere in Yucatan—notably Chichen Itza and Uxmal—but one more associated with Mexican than Maya art. Other objects include a stucco ornament resembling a pineapple (*e*) and a column of three stone drums (*d*), which may be a small altar or perhaps katun markers.

Structures Nos. 42, 43, and 44.—Just below the steps of temple 45 are two large altars and a shrine, as well as smaller altars and stucco objects. One of the altars (44) is a rectangular mass of masonry, but the other (42) rises in terraces and is capped by what looks like a short circular chimney, which probably served as a receptacle for burning incense. Shrine 43 is larger than the others nearby. It has four doors and a rectangular molding. Between it and the steps of temple

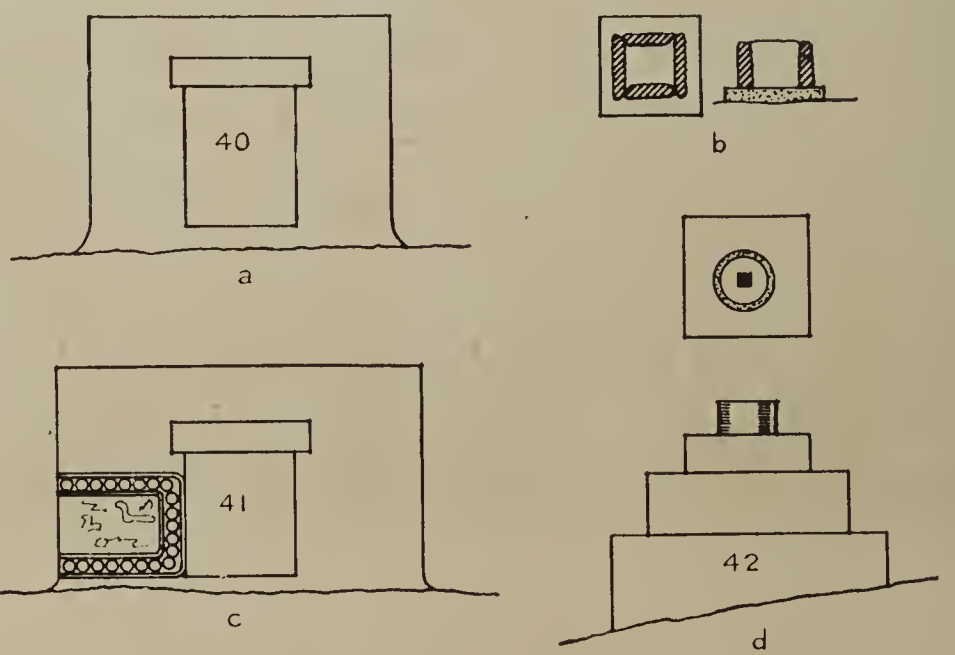


Fig. 101.—Elevations of structures 39 to 43, Tulum.

45 rest three small objects, of which Catherwood made a drawing in 1842. Nearest the steps is a stone drum (fig. 98, *a*), on which Catherwood shows an ornamental cap. The second (*b*) is described by Stephens as a pineapple. It is one of several of which fragments were found and which we believe represent squashes (see plate 9, *c*, *f*. The third object is a small square altar with a rectangular cavity on top for burning incense (fig. 101, *b*).

Structure No. 45.—The cliff fronting the sea at Tulum, as we have said, breaks down to form a small sandy cove just north of the Castillo. To the north of the cove is a steep eminence on which stands temple 45, one of the best-preserved buildings at Tulum. The temple faces northward and overlooks structures 39 to 44,

the Cenote House, and part of the Great Wall. The substructure is of interest because it is circular. The only round buildings in Yucatan are at Chichen Itza (the Caracol) and Mayapan. The former is still standing, but the latter was struck

FIG. 102.—North façade of temple 45, Tulum.

by lightning and destroyed in 1867. The Mayapan building is said to have been associated with the worship of Kukulcan. It is probable that a circular building

FIG. 103.—Temple 45, from the sea, Tulum.

was beyond the powers of east-coast architects and that this and other circular substructures to be described were associated with Kukulcan and were the nearest approach to a circular building of which the natives were capable.

The temple proper has a single room 8 feet long. The walls are 3 feet thick, an unusual ratio of wall to room-space at Tulum. Against the back wall is an altar, in front of which is a step. This is one of the altars still used by the Indians for religious observances. On top of the roof at each corner we found the remains of small stone statues which had been broken off.

Structures Nos. 46, 47, and 48.—To the south of the southwest corner of the Inner Inclosure are three low platform mounds connected by terraces. They, together with the west side of the inclosure, form one side of a street, across which stand structures 13, 21, and 25. This street is parallel to the main street, one "block" to the east.

Structure No. 49.—The southernmost building on the main thoroughfare is a platform 2 feet high, the nature of which is not entirely clear. At the back of the mound are the ruins of a shrine. On the front, at each side, are masses of masonry a foot or more high. These resemble those on structure 27, but lack the wall which runs along one edge of the latter.

The street on which this structure faces is defined by a long terrace about 6 inches high, which runs southward from structure 49 almost to the gateway. The opposite side of the street is similarly defined to the south from structure 48.

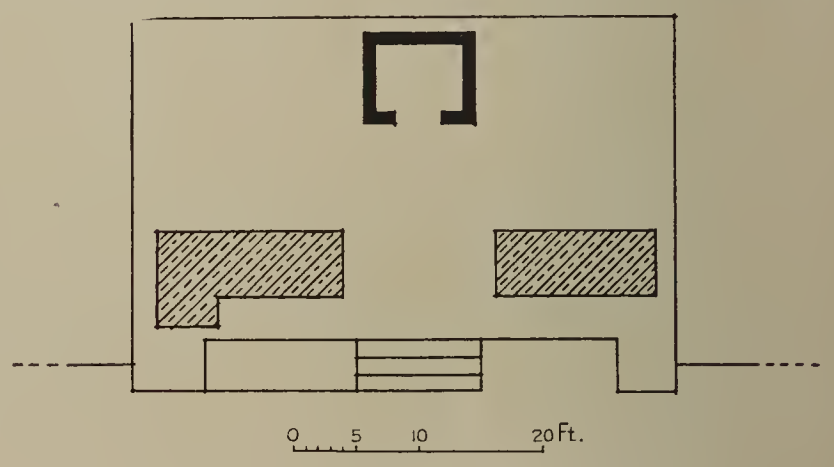


FIG. 104.—Structure 49, Tulum.

Structure No. 50.—This is a low platform mound, measuring roughly 60 by 30 feet, in front of the southeastern passage in the south arm of the Great Wall.

Structures Nos. 51, 52, and 53.—Structures 51, 52, and 53 form a group through which there appears to have run a street parallel to the other north-and-south streets. This particular thoroughfare starts at the structures named and probably ran along the edge of the cliff behind the Castillo. It may have continued beyond the cove to the eastern gateway in the north wall.

Structure 51 is a platform mound 130 feet long. Its principal aspect is towards the street and the sea. The central portion projects beyond the wings. There are steps in this projection and in the southern wing. To the west the mound merges with the rising ground near the top of the most elevated hillock inside the walls. Structure 52 is a platform mound standing across the street from 51. There are steps on the west side. Structure 53 also is a platform mound next to 52, from which it differs only in the stairs, which are sunk in the mound instead of projecting from it.

Structure No. 54.—This is a small temple overlooking the sea at the southeastern corner of the city. It is roughly symmetrical with 45 in relation to the Castillo. The building is chiefly interesting because its roof, of beams covered with rubble, was still standing in Stephens's day and has supplied data for the only description of this construction *in situ*. Stephens's account reads:

"It has four principal beams of wood, about six inches in diameter, laid on top of the wall from end to end of the chamber, with small beams, about three inches in diameter, laid across the larger so closely as to touch; and on these cross beams is a thick mass of mortar and large pebbles, which was laid on moist, and now forms a solid crust, being the same materials which we had seen in ruins on the floors of other rooms. Against the back wall was an altar, with a rude triangular stone upon it, which seemed to bear marks of not very distant use. On each side of the doorway were large sea-shells fixed in the wall for the support of the doors."

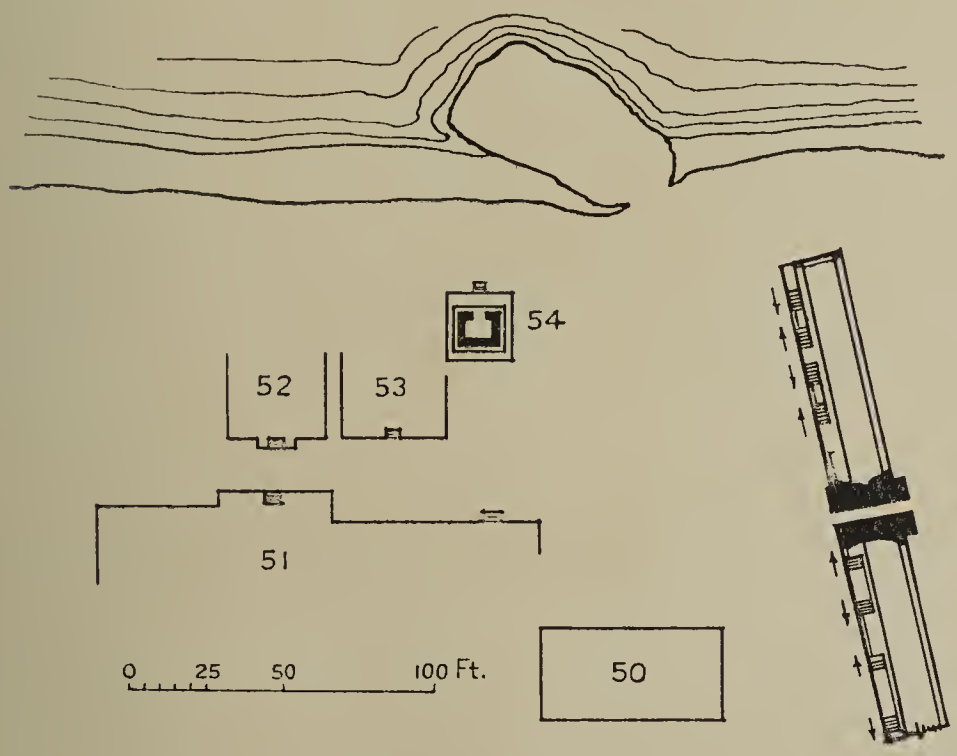


FIG. 105.—Structures 50 to 54, Tulum.

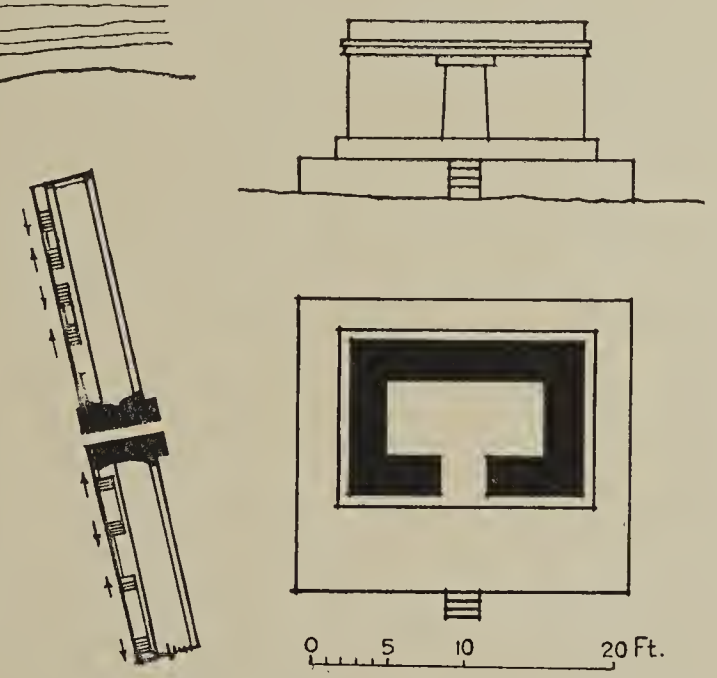


FIG. 106.—Ground-plan and elevation of structure 54, Tulum.

Since Stephens's day the roof has fallen and now presents the appearance shown on figure 13, B. The walls, however, are still intact (fig. 107). The altar described by Stephens is buried under the débris of the roof.

The Guard Towers (*Structures Nos. 55 and 56*).—The inland corners of the Great Wall are occupied by small buildings to which the name "Guard Towers," given by Stephens, has clung, although in reality they probably served as temples. The ground plans of the buildings are very similar: a square structure with doors to the east, west, and south and an altar against the north interior wall. One of the chief reasons for believing that the buildings were for religious rather than military purposes is that temple 56, on the southwest corner of the wall, has no door facing the long west arm of the wall, which would scarcely be the case if it was designed to shelter the guardians of the city.

FIG. 107.—Structure 54 from the southwest, Tulum.

Although the ground-plans are the same, the elevations of the two temples are different. Temple 55 (fig. 37) has a sunken panel over the door and two rectangular moldings. The mural zone below the moldings was once painted with frescoes, of which little now remains, because the plaster has peeled off. The small

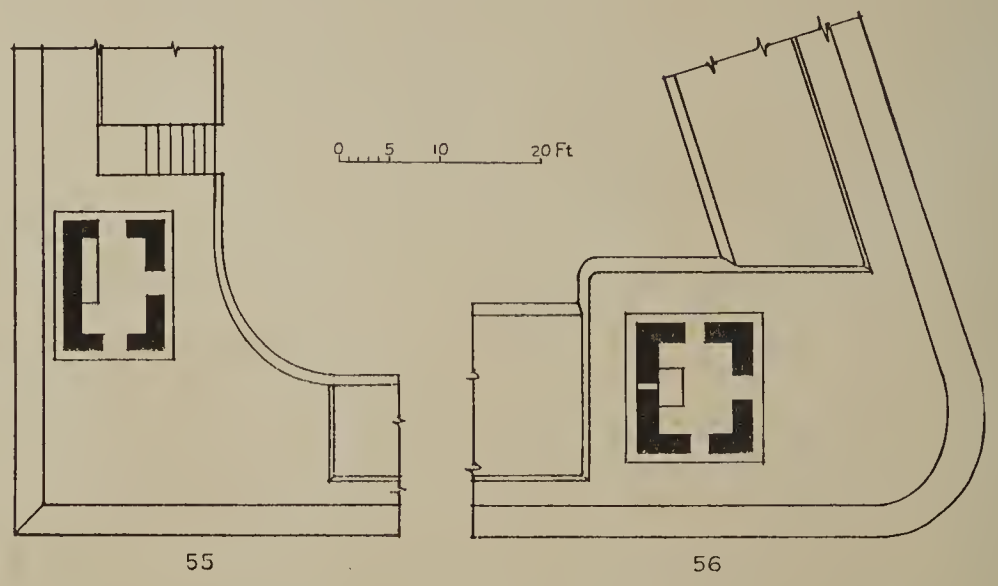


Fig. 108.—Ground-plans, structures 55 and 56, Tulum.

Fig. 109.—Structure 55, Tulum.

fragment in figure 110, *b*, however, is enough to show that the style was similar to the mural paintings in the corridors of the Temple of the Frescoes and on the façade of the Temple of the Diving God and that the figures were silhouetted against a black background. The sunken panels above the doors were painted blue. On the southwest corner of the building, between the moldings, is a small stucco figure

(fig. 110, *c*), which may represent the Diving god. Above the upper molding is a frieze which encircles the building (fig. 110, *d* and *e*). It consists of geometric panels sunk into the wall and low-relief stucco decoration. The design is very similar to one found at Dsibiltun,[1] and probably represents serpents' jaws in profile in an extreme stage of conventionalization. At the corners of the building are

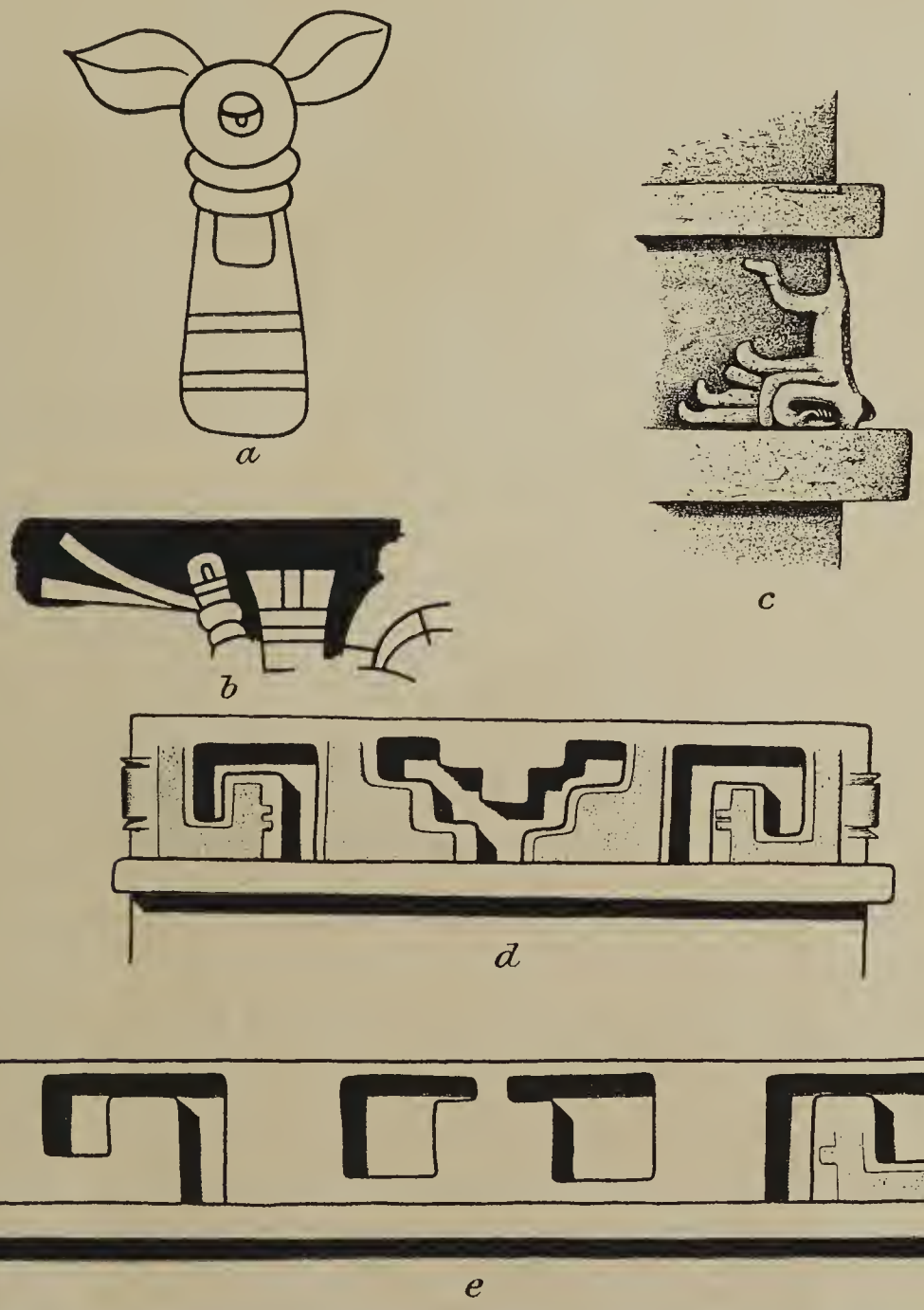


FIG. 110.—Temple 55, Tulum: *a*, west façade; *b*, south façade; *c*, southwest corner; *d*, west façade; *e*, south façade.

plaster likenesses of the half-columns which form such an important feature of façade decoration elsewhere in Yucatan. They are the only examples on the east coast. The sunken panels on the frieze appear to have been filled with painted decoration, of which a fragment from the central panel of the western façade is represented in figure 110, *a*.

[1] Spinden, Maya Art, p. 124.

The southwest Guard House, temple 56, is structurally like 55 (see fig. 38), but has no frieze. There are traces of paint on the lintels and the exterior walls probably also were painted.

Structure No. 57.—About a quarter of a mile north of the Great Wall are two small temples which are visible from the sea. The writer believes that they may be the remains of an "Old Tulum," a settlement not as early as the Little Descent of Old Empire times, but dating from the time of the League of Mayapan. This belief is founded on the fact that both buildings are free from Nahua features, that one of them has a roof-comb, and also because the walls of both are thicker in relation to the room-space than in most Tulum edifices.

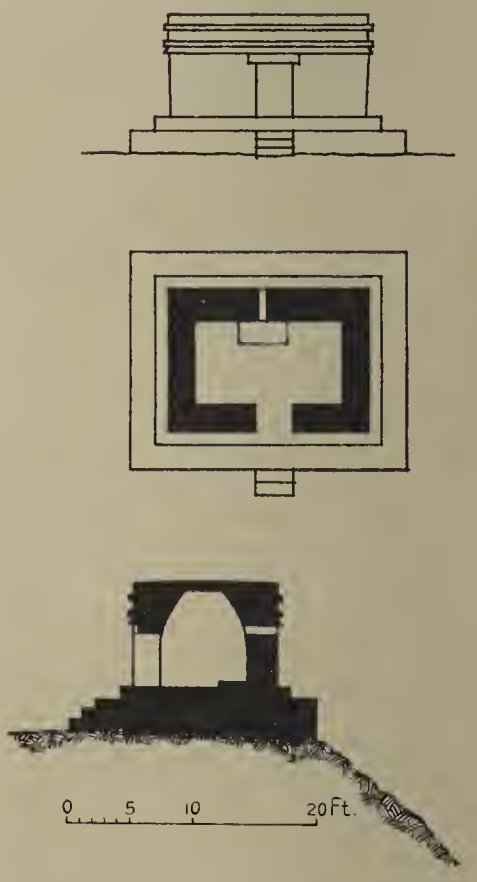


FIG. 111.—Structure 57, Tulum.

The southern building, temple 57, stands on the brow of a steep slope within 100 feet of the cliff fronting the sea. It has one room and faces west from the sea. The principal façade has the usual sunken panel over the door and also two moldings. The walls are 3 feet thick, while the room measures only 6 by 11.5 feet.

Structure No. 58.—Seventeen feet west of the stairs of structure 57 is an altar 8 feet long, 5 feet wide, and 2 feet high. Nearby in the jungle are many traces of stone walls which may have outlined house lots or cultivated fields.

Structure No. 59.—Two hundred paces north of structures 57 and 58 is another small temple, a well-preserved building crowned by a roof-comb. It stands on a

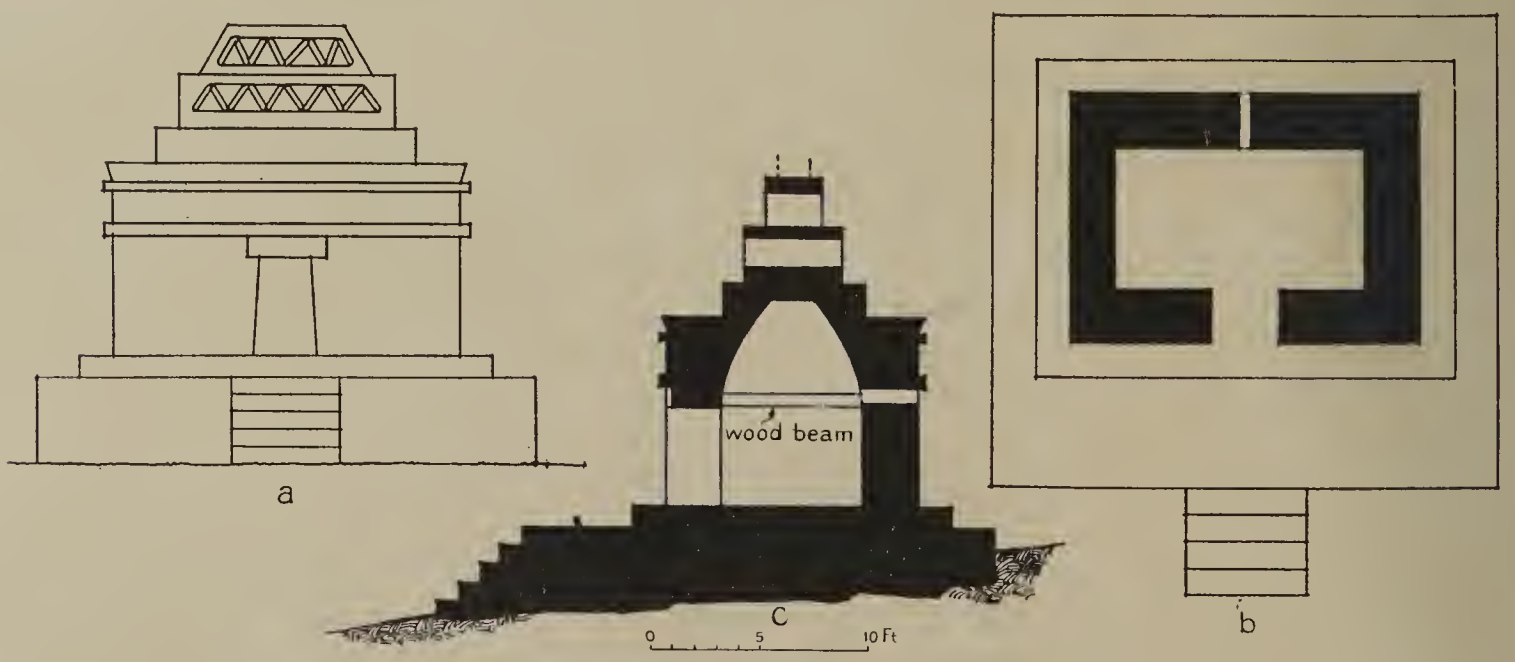
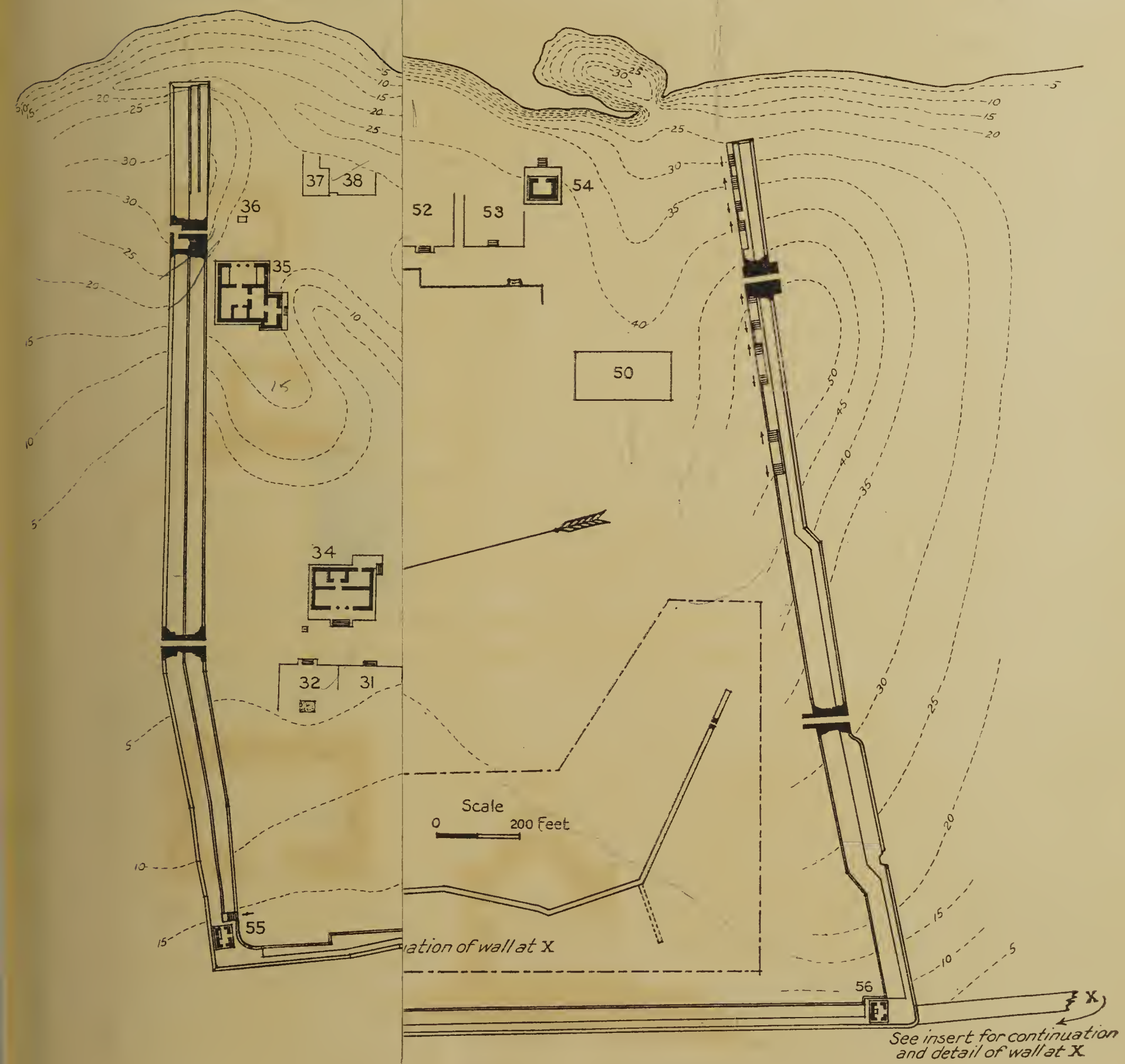


FIG. 112.—Plans of structure 59, Tulum.

small platform 60 or 70 feet from the sea, which it faces. The single narrow doorway is capped by the usual sunken panel and there are two rectangular moldings. The

A



cation approximate
erval 5 feet

C A R I B B E A N S E A

NORTH (Magnetic)

Scale
0 50 100 150 200 Feet

Scale
0 200 Feet

Continuation of wall at X

See insert for continuation and detail of wall at X

Sketch contours, location approximate
Contour interval 5 feet

General map of Tulum.

roof rises in terraces and supports the only roof-comb seen at Tulum. Unlike the examples of this feature nearby at Tancah, it is pierced from back to front not by rectangular openings but by a series of triangles. These openings are formed by slanting stones set in a heavy frame of masonry. Formerly the roof-comb was at least one tier higher than at present, and the whole was neatly covered with plaster, which hid the crude stonework now apparent.

The walls of the building are unusually heavy, in order to support the extra load. The vault, as can be seen from the cross-section on figure 112, cuts into the lower terrace of the roof and is strengthened by wooden cross-beams. There is no altar, but a small window pierces the back wall opposite the door.

Fig. 113.—Structure 59, Tulum.

With this building we end our description of Tulum. What we have described in all probability includes the most important edifices of the city. Other remains were seen in the jungle without the Great Wall, but these were small platform mounds or merely heaps of rock.

CHAPTER V.

OTHER RUINS ON THE EAST COAST OF YUCATAN.

Having completed our description of Tulum, we shall now discuss the remaining ruins on the east coast of Yucatan. Our information concerning these sites is not great, for they have been inspected but superficially, yet they exhibit many features of interest and importance to a general understanding of east-coast archæology. We shall first take up the ruins of Tulum Playa and Tancah, which stand on both sides of the main ruins at Tulum and which in aboriginal times may have actually been part of that city. We shall next describe the remains northward along the coast and on the near-by islands. Finally, we shall touch briefly on the sites found to the south of Tulum.

TULUM PLAYA.

The site thus named is situated about a league south of the Castillo at Tulum, directly inshore from the widest opening in the barrier-reef on this part of the coast. It is now the seat of a small village which has grown up through the Pardilla chicle operations of recent years. The only aboriginal edifice is a small temple situated about half a mile south of the modern houses. The building stands on a point of land about 60 feet from the water's edge, which it faces. The façade exhibits the usual sunken panel and a two-member molding like the flat-ceiling buildings in the Inner Inclosure at Tulum. The front edge of the roof is lined with six small statues of birds and animals. Originally finished in plaster, nothing now remains but the crude stone base.

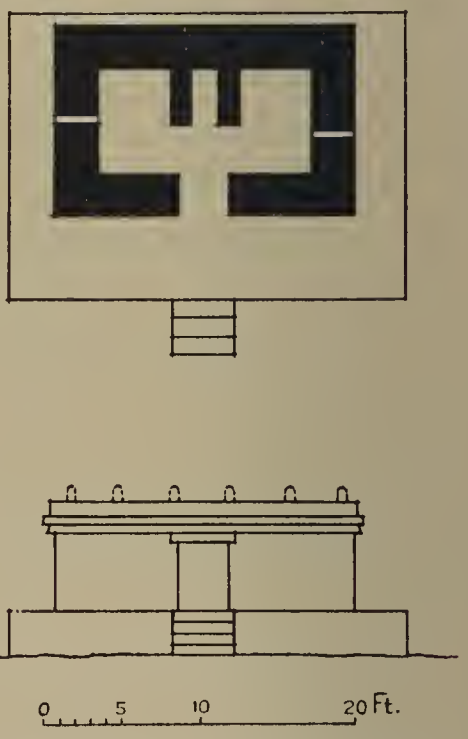


FIG. 114.—Edifice at Tulum Playa.

The roof, formerly supported by wooden beams, has filled the interior room with the usual irregular masses of rubble. The sanctuary-roof, still in place, has four north-and-south beams on which rest slabs of limestone. The sanctuary itself consists of two parallel walls projecting from the back wall of the building, by far the simplest construction of this form encountered. We must consider it a degenerate type, in view of the fact that this feature extends well back into Old Empire times. The door, or perhaps we should say the open side of the sanctuary, is less than 2 feet high and has both a wooden and a stone lintel.

TANCAH.

The ruins of Tancah are situated less than an hour's walk north of the Castillo at Tulum, i. e., about 3 miles away. The path leads in part along the beach, but where it strikes inland we saw many stone walls and other evidences of man's handiwork, so that it seems probable that the two sites were practically continuous in aboriginal times. This surmise is given added weight by Juan Diaz's description

of a city as big as Sevilla on this part of the coast and also by the name Tancah, which means "in front of the city," a very appropriate name for a suburb.

These ruins were first seen by J. J. Galvez and are briefly mentioned by Stephens. We were chiefly drawn to them, however, by the report that had reached Belize of a long hieroglyphic inscription cut on the walls of a neighboring cave. These proved to be pictographs of a most disappointing nature, but nearby were discovered two courts surrounded by ruined buildings. They are situated a quarter of a mile from the beach and an equal distance north of the cave containing pictographs.

The general assemblage of the two plazas is shown on plate 26. Group A consists of five standing buildings and five mounds. Two sides of a court are outlined by structure 1 and structures 3 to 7. Plaza B much more definitely forms an inclosed court with the usual platform mound in front of the chief temple. A short distance to the south of plaza B is a cave which may have furnished water to the ancient inhabitants.

Architecturally, Tancah is surprisingly different from the neighboring Tulum remains. The features which seem worthy of special notice are the following:

(1) At Tancah there is only one building with a wooden ceiling, and this is not of the Tulum type.

(2) At Tancah there are no columns.

(3) At Tancah there are no buildings of the palace type.

(4) The step which usually surrounds the Tulum buildings is not common at Tancah.

(5) The three-member molding, typical of western and northern Yucatec buildings of the period of the League of Mayapan, is not seen at Tulum, but there are four examples at Tancah.

(6) Shrines at Tulum are placed on the ground or on low platform mounds; at Tancah they are found on relatively high terraced pyramids in positions indicating an important place in the religious organization of the city.

(7) The pyramids supporting the shrines are of the same type as those supporting temples with roof-combs. (Compare structures 12, 16, and 17.) It therefore appears that the two types of edifice are roughly coeval.

From these indications, together with the lack of features of the Toltec period, such as serpent-columns, battered bases of walls, etc., we conclude that the buildings at Tancah are earlier than those at Tulum, except, perhaps, structure 59 at the latter place. The roof-combs and moldings suggest that these edifices were erected towards the end of the League of Mayapan—perhaps during the eleventh and twelfth centuries—and a count of the plaster layers (assuming renewals every Katun or 20 years) leads to the same conclusion.

Structure No. 1.—This edifice is the easternmost in group A. It consists of a truncated pyramid rising in two stages, with two small buildings on the lower level and a shrine on the top (plate 24, B). It represents a class of which other examples occur at Tancah and Xelha, in which small shrines are placed on top of incongruously large and high substructures. In the present instance the survey is only

approximate, owing to the débris covering the corners, but the base of the substructure appears to be 60 feet square and the height 16 feet, while the building it supports is 8 feet square and 6 feet high. We have already seen large numbers of shrines at Tulum, where they were invariably built on the ground or on low platform mounds. It is therefore surprising to find them placed on large substructures only a few miles away at a site which is practically part of the same city. The explanation probably lies in the difference in date of construction.

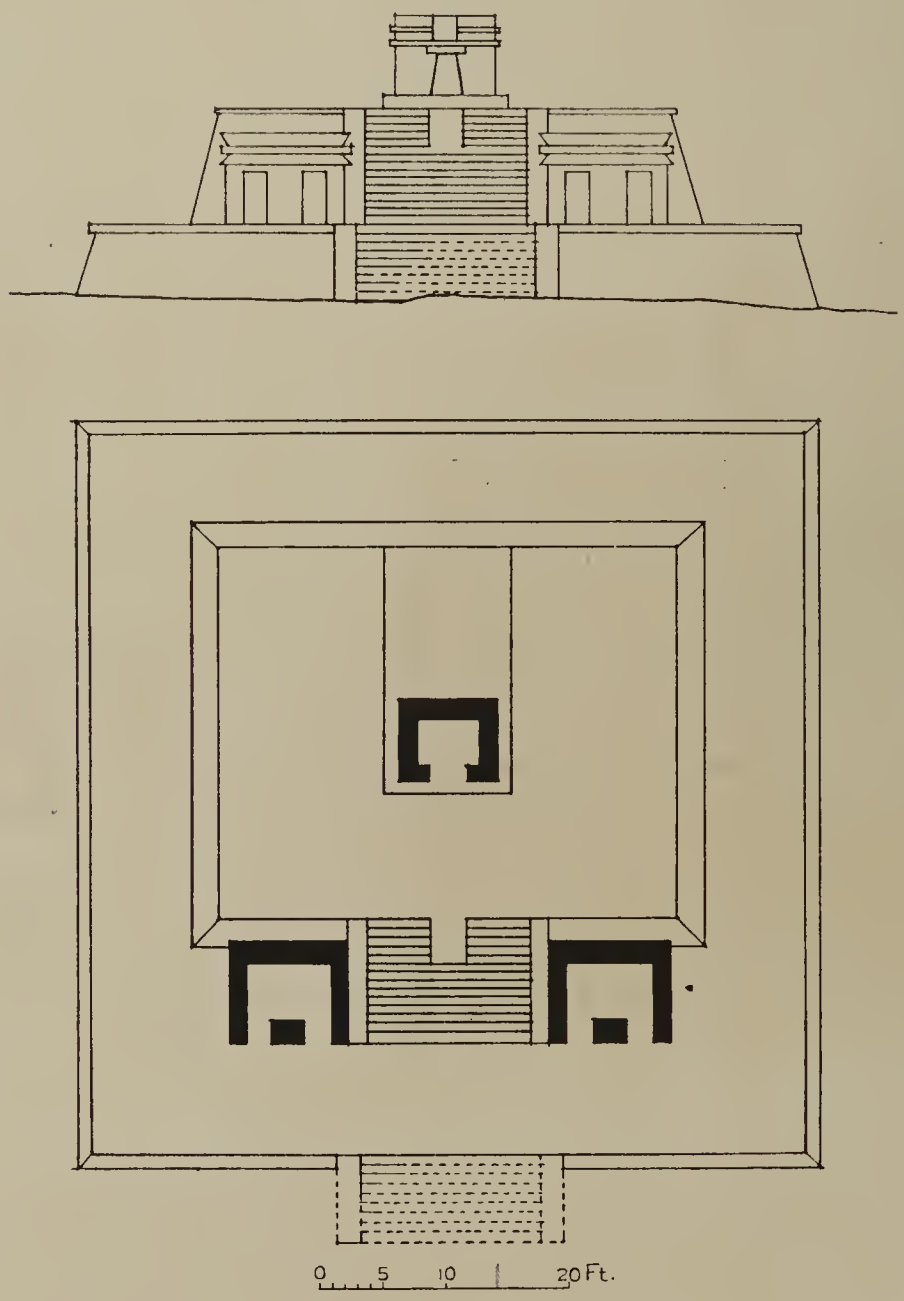


FIG. 115.—Structure 1, Tancah.

Structure 1 is ascended by stairs on the west side. The lower flight is badly ruined. The top of the upper flight is divided by a masonry pier which may have served as an altar. There is a similar pier at Chichen Itza, at the top of the great stairway in the Monjas, a building which is believed to date from the period of the League of Mayapan. On each side of the upper stairway of structure 1, resting on the first terrace of the substructure, is one of a pair of small buildings. Half of the vault has fallen in one of these, but the other is almost intact. This is decorated by a three-member molding which is typical of Maya buildings of central Yucatan

before the Toltec invasion, i. e., before 1200 A. D. The masonry is uncommonly fine, and the sunken panel over the door, usually so conspicuous in east-coast architecture, is absent. From these facts it may well be argued that these twin buildings represent an early construction as compared with others on the east coast. The interior of both was vaulted, with the long axis running north and south. In the back wall of the standing building there is a large crack from which a current of cold air emerges. Where this originated we could not imagine, for all parts of the whole edifice were protected by the jungle from the trade-winds; but the fact that this current of air through the pyramid exists is an indication that there are interior chambers yet to be explored.

FIG. 116.—Shrine on summit of structure 1, Tancah.

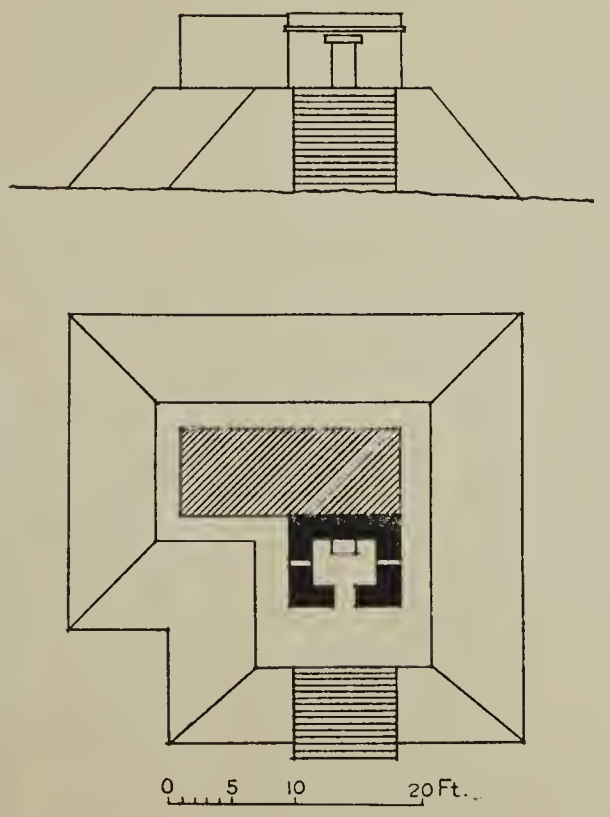


FIG. 117.—Structure 3, Tancah.

The shrine on the upper terrace has the usual sunken panel over the door and has a niche above this containing a crude figure of the Diving god, which has almost been obliterated by many coats of plaster. In the door-panel fifteen layers of plaster were counted. On the east wall were traces of red paint and the whole exterior may have been painted that color. Inside the door there are stone rings on each side. The vault is 5 feet high and unusually crude. It was thickly covered with plaster, of which eleven and thirteen layers were counted in two places where it had partly peeled. If our supposition that plaster was renewed at the beginning of the katun (20-year period) is correct, then the shrine of structure 1 dates from the middle of the thirteenth century.

Structure No. 2.—In front of structure 1 is a rectangular pile of rocks which may mark a tomb.

Structure No. 3.—At the northwest corner of structure 1 is an L-shaped substructure 8 feet high, the sides of which appear originally to have been terraced. The long arm of the L supports a rectangular mass of unshaped stones carefully piled up without mortar. The purpose of this enigmatic construction we can not

FIG. 118.—Shrine on structure 3, Tancah.

explain. The short arm of the L is occupied by a shrine which backs against the mass of masonry. The shrine has a sunken panel over the door and a single molding. Inside there is a rectangular altar against the back wall. In the north and south walls there are windows.

FIG. 119.—Structure 5, from temple 6, Tancah.

Structure No. 4.—This to-day is a conical mound of stone. There is no trace of an edifice on top.

Structure No. 5.—This also is a conical mound of stone without trace of a building on the summit. The view here given is typical of a number of such mounds both at Tancah and Xelha. They appear to have been constructed with either no mortar or such poor mortar that it has washed away.

Structure No. 6.—This small and badly cracked temple stands on one end of a platform 42 feet long and 21 feet wide. The substructure has rounded corners and vertical sides and is ascended by a flight of 12 steps on the south end. The temple

FIG. 120.—Temple 6 from the south, Tancah.

FIG. 121.—Stucco figure on south interior wall, structure 6, Tancah.

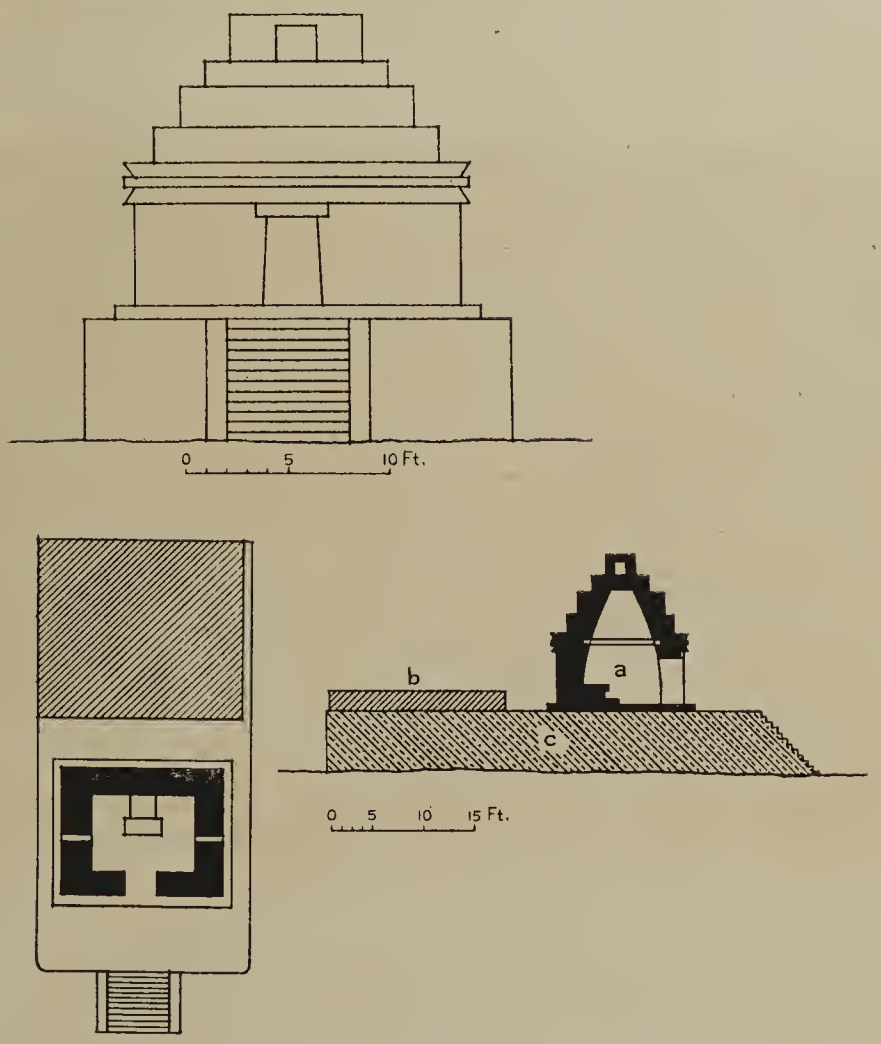


FIG. 122.—Plans of structure 6, Tancah.

has a three-member molding, above which the walls retreat in a series of terraces, and on top there is a small roof-comb. An examination of the interior discloses the fact that the vault cuts through the inside of the terracing.

The door of the temple is of the usual east-coast type, with a sunken panel across the top. There are traces of paint in this panel. The interior has a vault 11 feet high braced by two wooden cross-beams. On the east side of the door is a

FIG. 123.—Structure 8 from the south, Tancah.

crude stucco figure which apparently represents a monkey. Against the back wall is an altar, approached by a step and surrounded by a rectangular cornice. Behind the temple, on the same substructure, is a square mass of uncemented masonry (fig. 122). This corresponds to the similar mass on structure 3.

Structure No. 7.—West of temple 6 is a low rectangular pile of masonry which may cover a tomb.

Structure No. 8.—This is a shrine which measures 8 feet in each dimension. It stands on a platform with vertical sides and a stairway on the south. The door is capped by a sunken panel and there are two rectangular moldings. On the rear (north) exterior wall are two monkeys crudely modeled in plaster. The interior is vaulted and not high enough to permit standing erect. Against the back wall is an altar over which is a small window.

Structure No. 9.—In front of structure 8 is a low rectangular platform mound.

Structure No. 10.—This small building, which probably once had a second story, consists of an inner room surrounded on three sides by two corridors. The façade, which is only 7 feet high, has two rectangular moldings. The entrance on the south side consisted of triple doorways separated by masonry piers. A sunken panel ran across the doors, and a very much battered human head found on the ground probably belonged to a stucco figure set in a niche over the central door. The plaster on each side of the entrance bears imprints of the "red hand."

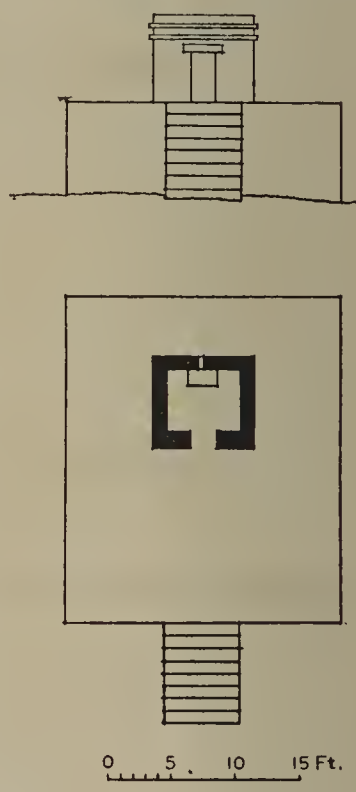


FIG. 124.—Structure 8, Tancah.

Passing through the doorway, one enters a narrow corridor which runs around three sides of the building. The roofs of this and of the inner corridor are carried by a half-vault, in each case built against the interior wall. A single door leads to the second corridor. It is outlined by a band of blue paint 3 inches wide and is surmounted by a sunken panel, over which are two rectangular moldings. The lintel is made of flat wooden beams. The second corridor also runs around three

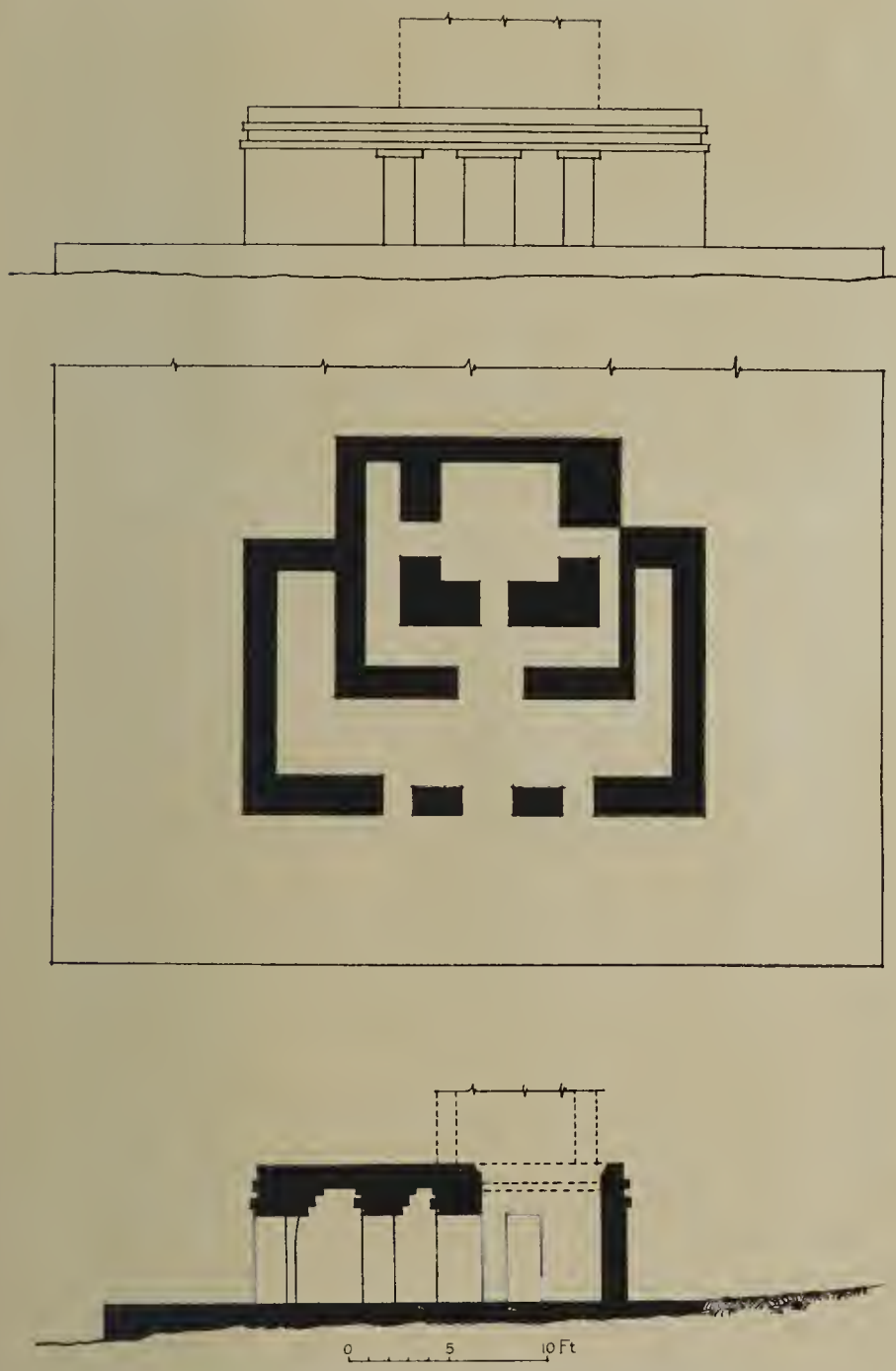


Fig. 125.—South façade of structure 10, Tancah.

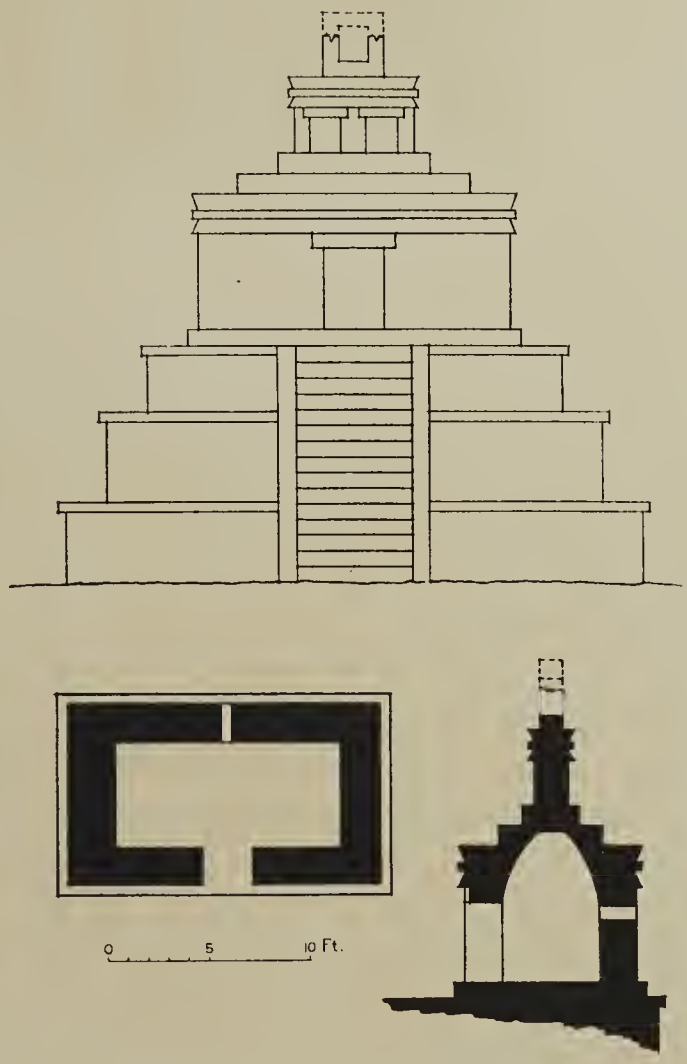


Fig. 126.—Plans of structure 12, Tancah.

sides of the building and is only 1 foot wide on the east side. Three doors, one in each wall, lead from it to the interior chamber, which is 7 feet square. The roof has fallen. It may have been supported by wooden beams, of which several were seen in the débris, but no holes for their insertion were seen in the walls. Our belief that this building had a second story is based on the slight signs of a wall above the roof-level, which can be seen in figure 127, and also on the large amount of fallen stone which has almost completely choked the interior room.

A fragment of plaster which had fallen from the molding in the outer corridor disclosed no less than 23 layers. From this it may be argued that the building witnessed the passing of an equal number of katuns and was erected during the latter part of the eleventh century.

FIG. 127.—South façade of structure 10, Tancah.

A

East side.

South side.

B

FIG. 128.—Structure 12, Tancah.

Structure No. 11.—In front of structure 10 is a rectangular inclosure formed of two parallel lines of stones. There is an entrance to this court in the center of the south side. The lines of stones quite possibly indicate the foundations of mud walls which have been washed away.

Structure No. 12.—This building stands on the western side of court B. It consists of a nearly ruined edifice which rests on a steep, three-tiered substructure (fig. 126). Over the door-niche, which is painted red, is a three-member molding, above which is a terraced roof like that on structure 6. The top of the roof is

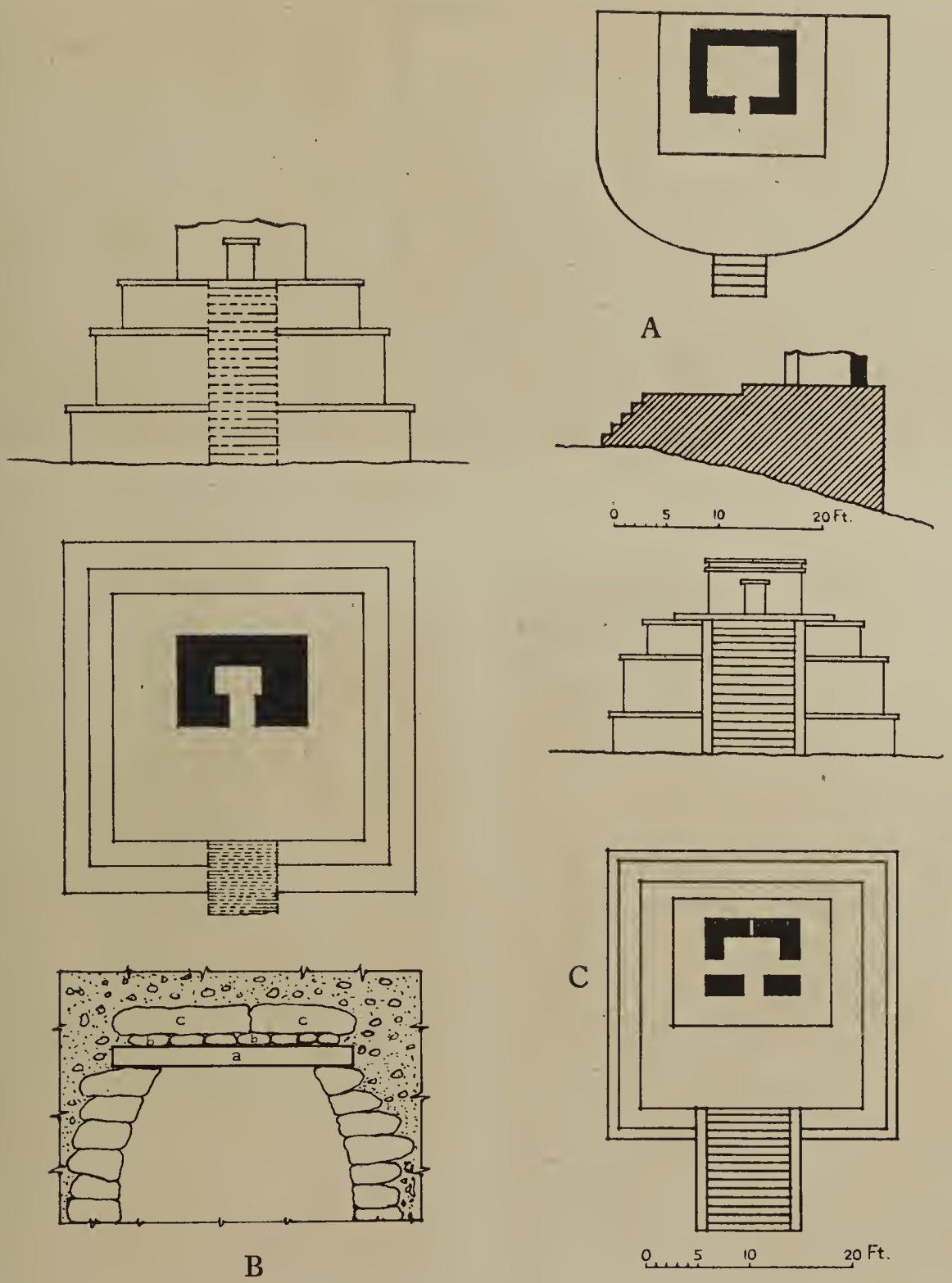


FIG. 129.—Tancah: A, structure 14; B, structure 16; C, structure 17.

crowned by a castellated roof-comb of two tiers, each pierced by rectangular openings. The two tiers of the roof-comb are separated by a three-member molding. There is a similar molding on the House of the Pigeons at Uxmal. The interior of the building is vaulted, the vault running into the terracing of the roof. There are

several layers of stucco, at least two of which are painted with frescoes. The south wall has fallen outward, as shown in figure 128.

Structure No. 13.—This is a platform mound abutting on structure 12 to the south. It is almost 3 feet high.

Structure No. 14.—At the west end of the south side of plaza B is a small shrine resting on a substructure with a round front (fig. 129, A). The ground slopes rapidly away behind this mound, so that the back is much higher than the front. There are four steps in the center of the curved side. On top is a rectangular platform on which rests a shrine. The walls have fallen above the height of the door. A low stone wall runs across the corner of the plaza from this building to structure B.

FIG. 130.—Structure 16, Tancah.

Structure No. 15.—Abutting on structure 14 is a rectangular substructure about 5 feet high, on top of which are traces of a badly ruined shrine.

Structure No. 16.—Directly across the plaza from structure 12 is a large, three-tiered pyramid with traces of stairs on the west side (fig. 130). On top is a small building the walls of which are 3 feet thick, while the room inside is only 4 feet long and 3 feet wide. The ceiling is of a unique type. The north and south walls project inward, as in the usual vault, but the capstones are replaced by four wooden beams marked *a* on the section on figure 129, B. Across the interstices between the wooden beams were placed flat stones about a foot long (*b*, *b*). Over these stones large

stone slabs were laid (*c*), which run in the same direction as the wooden beams. On top was a concrete cap. This curious ceiling seems to represent a half-way stage between the true Maya vault and the typical flat ceiling as seen at Tulum and elsewhere. It is an exceedingly cumbersome affair in spite of the short space it spans. It owes its preservation to the fact that part of the ceiling collapsed and the concrete cap slid off the still remaining beams, thus relieving them of most of their load.

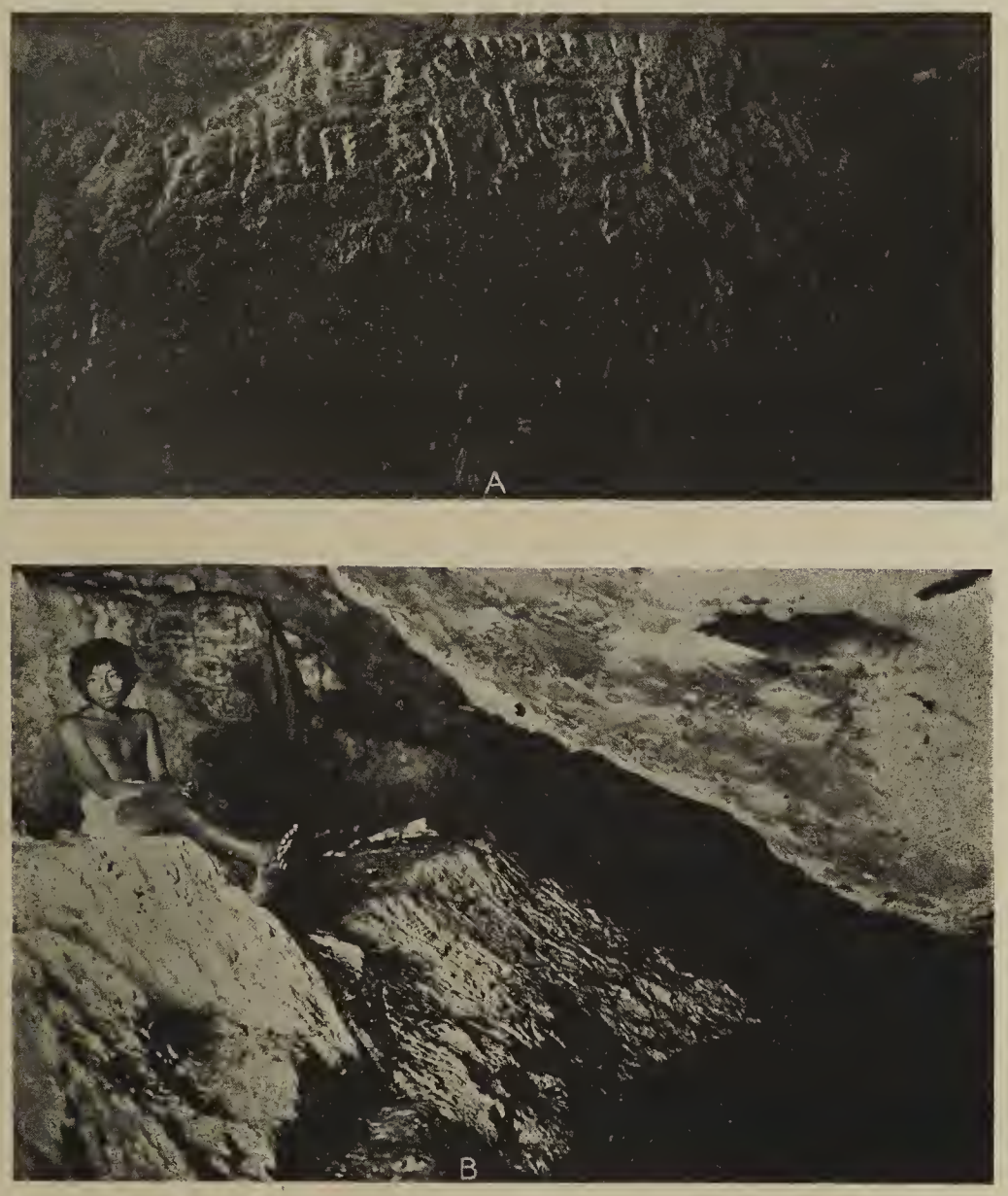


FIG. 131.—Cave of Tancah: A, pictographs; B, general view.

Structure No. 17.—This also is a terraced pyramid with stairs on the west side and a shrine on top. Although most of the exterior facing of the building has crumbled away, so that it resembles a stone-pile, the interior is well preserved and the vault is still standing. There are three doors. Those in the north and south walls are not in the center, but are built against the front wall of the building—a most unusual arrangement (fig 129, c).

Structure No. 18.—This appears like a pile of rocks 10 or 15 feet high. There is no trace of terracing on the sides or a building on the summit.

Structures Nos. 19 to 22.—These are all platform mounds on the north side of the plaza. They range in height from 1 to 3 feet and present no features of interest.

Structure No. 23.—This is a small platform mound standing in the center of court B in front of the steps of temple 12.

THE CAVE OF TANCAH.

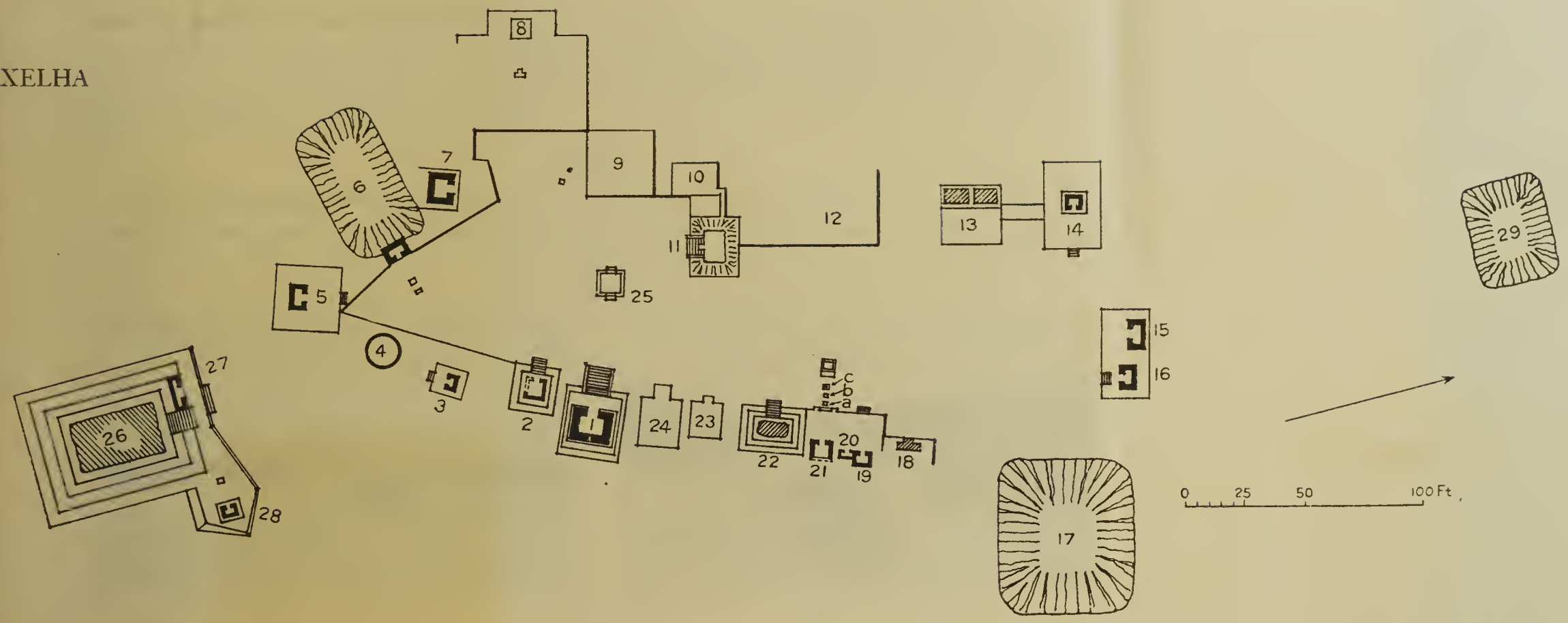
The cave containing pictographs is about a quarter of a mile from the coast, behind an abandoned chicle settlement which was forcibly broken up by the Indians a few years ago. Fifty yards from the beach the trail passes a brackish but drinkable *cenote*. Before reaching the cave it crosses the corner of a milpa and passes over a low hill. The cave itself is a semicircular opening 15 or 20 feet deep and nearly 100 feet long. Near the bottom is a flat ledge. This has been partly leveled and partly built up of masonry. Below the ledge is a slope which soon enters the water, which is cold and clear. A search for objects on the bottom, 5 feet under water, proved fruitless.

Stone idol. Altar.

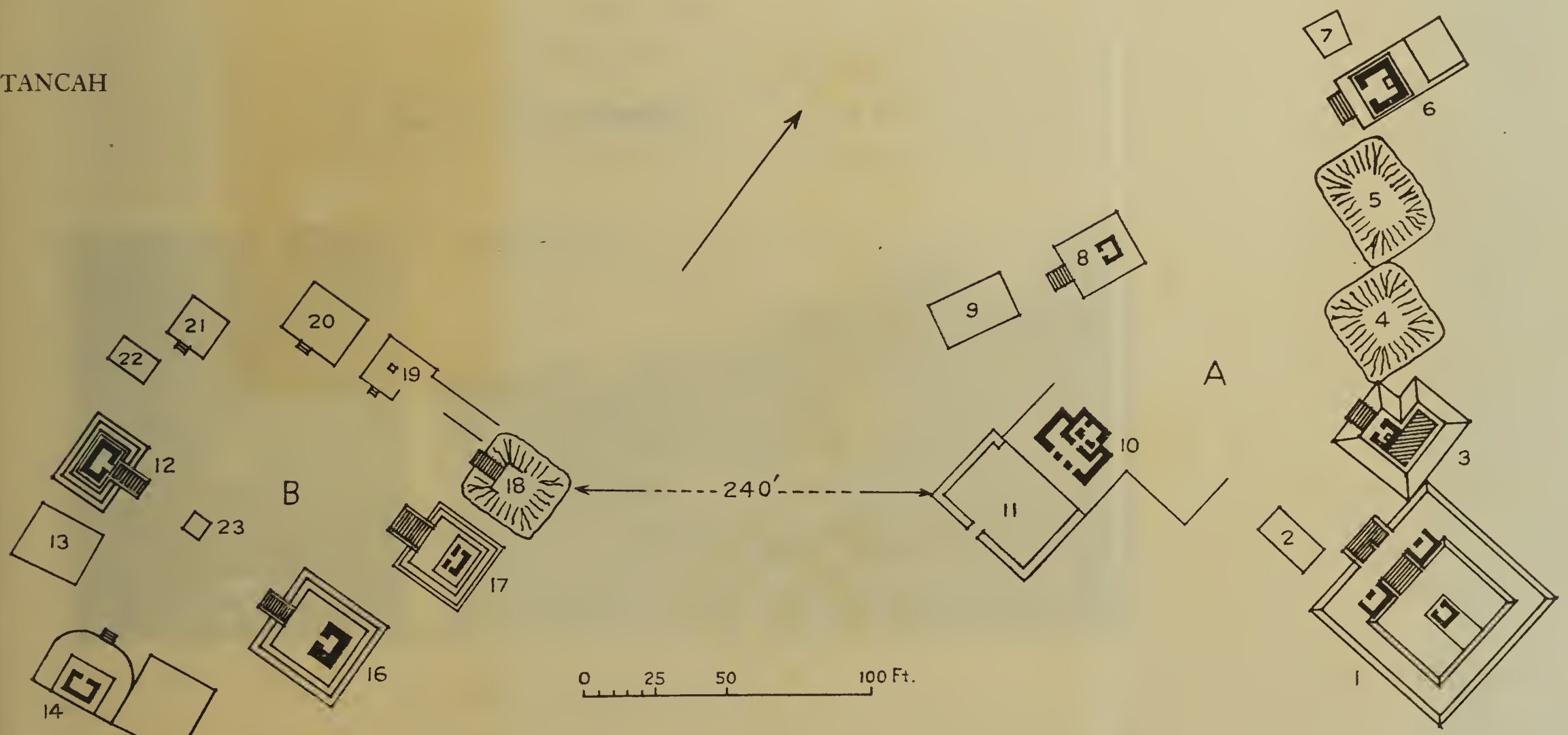
FIG. 132.—Cave of Tancah.

The "hieroglyphic inscription," which had led us to this site and indeed had inspired Mr. Morley to make the trip up the east coast, was cut on the slope just above the water, as can be seen on figure 131, B. A closer view (fig. 131, A) discloses incised patterns which vaguely resemble glyph-blocks, but which are apparently meaningless. We concluded that this cave probably formed a retreat in which the Indians continued their native ceremonies after the introduction of Christianity and that the carvings on the rock were crude attempts to cut glyphs after the real knowledge of the art had passed away. This belief was strengthened by the discovery of a crude stone idol which had been luted to a base of masonry at one end of the cave (fig. 132). The idol was formed of a large slab of stone, on which, again, had been cut glyph-like pictographs. It could hardly have dated

XELHA



TANCAH



Maps of Xelha and Tancah.

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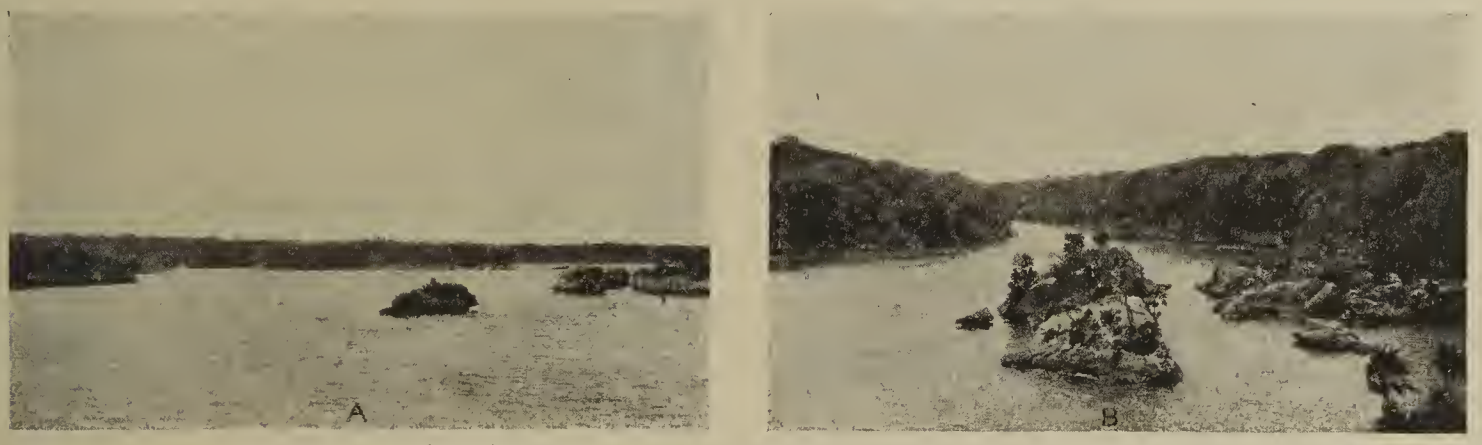
from the prime of the Maya civilization. Some distance in front of the idol was a stone altar (fig. 132) made in the form of a miniature truncated pyramid and neatly covered with plaster. An idol once stood on this, but was carried away by Mexican troops 15 or more years ago.

XELHA.

The ruins of Xelha[1] are situated near the bay of the same name. The entrance to this bay is a gap in the limestone coast-line about 100 feet wide. This opening is partially blocked by a reef on which there is considerable surf. There are two



Fortified peninsula. South arm.

FIG. 133.—Xelha lagoon.

right-angled turns in the channel through the reef, so that the passage is dangerous for small boats even in calm weather. The bay is roughly Y-shaped, the channel leading up the stem of the Y. Limestone cliffs from 5 to 15 feet high line the shores. The water, dotted with diminutive islands, is a bright blue green, through which the white coral sand glistens like silver.

North end. South end.

FIG. 134.—Wall of Xelha.

Somewhere near this bay the Spaniards under Montejo are reputed to have established the first European settlement in Yucatan in the year 1528. Of it we

[1] Xelha is derived from *Xēl*, a root meaning to open or break, and hence opening or pieces, and from *ha*, water.

saw no trace. The aboriginal ruins consist of a fortified peninsula between the arms of the bay and a group of buildings situated half a mile west of the north arm of the bay.

THE XELHA WALL.

In the fork of the two arms of Xelha Bay is a peninsula, about 200 yards in length and breadth, which is joined to the mainland by a narrow tongue of land. This peninsula is seen in the middle distance on figure 133, A. The connecting neck is defended by a stone wall which is structurally comparable to the Great Wall at Tulum. The height averages about 8 feet and the thickness varies from 8 to 25 feet.

The southern end of the wall terminates abruptly at the edge of a small cliff above the water (fig. 134, B), which is here quite deep. A few steps to the west is a small island to which access is gained by a bridge formed of a large limestone slab. Near the south end of the wall is the only entrance to the peninsula, a narrow passage in which there is a right-angled turn (fig. 135). North of the passage the wall is very much thicker than before and has a well-defined curtain-wall or parapet on the outer edge. Thirty-five feet from the passage there is an offset in the outer slope, similar to those in the south arm of the Tulum wall and affording a vantage-point for cross-fire. At this corner is a small room built in the thickness of the parapet, probably for the purpose of storing arms. Forty feet north of the offset the wall reaches the water on the other side of the peninsula (fig. 134, A). It does not terminate here, however, but follows the shore for a distance of 60 feet. The apparent reason for this is that the water is not so deep as at the south end, and the extension along the shore was necessary to prevent attackers from wading around the end of the wall.

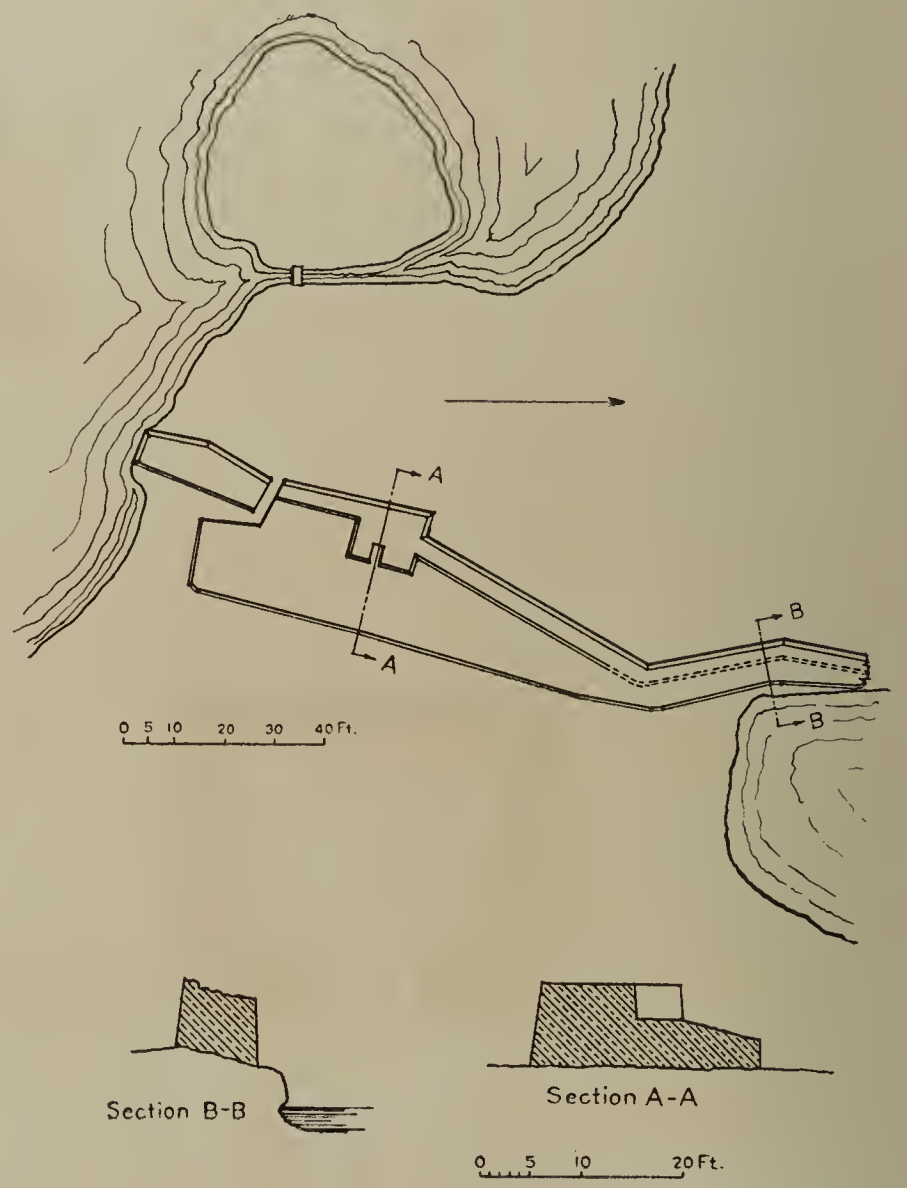


FIG. 135.—Plan of the wall, Xelha.

XELHA RUINS.

The city of Xelha is reached by a trail which passes by the northern arm of the lagoon. From this point it is a little over half a mile westward to the ruins,

which are so close to the sea that the surf is distinctly audible. The aboriginal settlement consists of a plaza outlined by various buildings (plate 26), as well as scattered mounds to the northward, which were not surveyed. In ancient times it may have extended to the sea, for traces of walls were noted along the trail we followed to reach the center of the city. The shape of the plaza is unusual, owing to the very pointed corner at the south end.

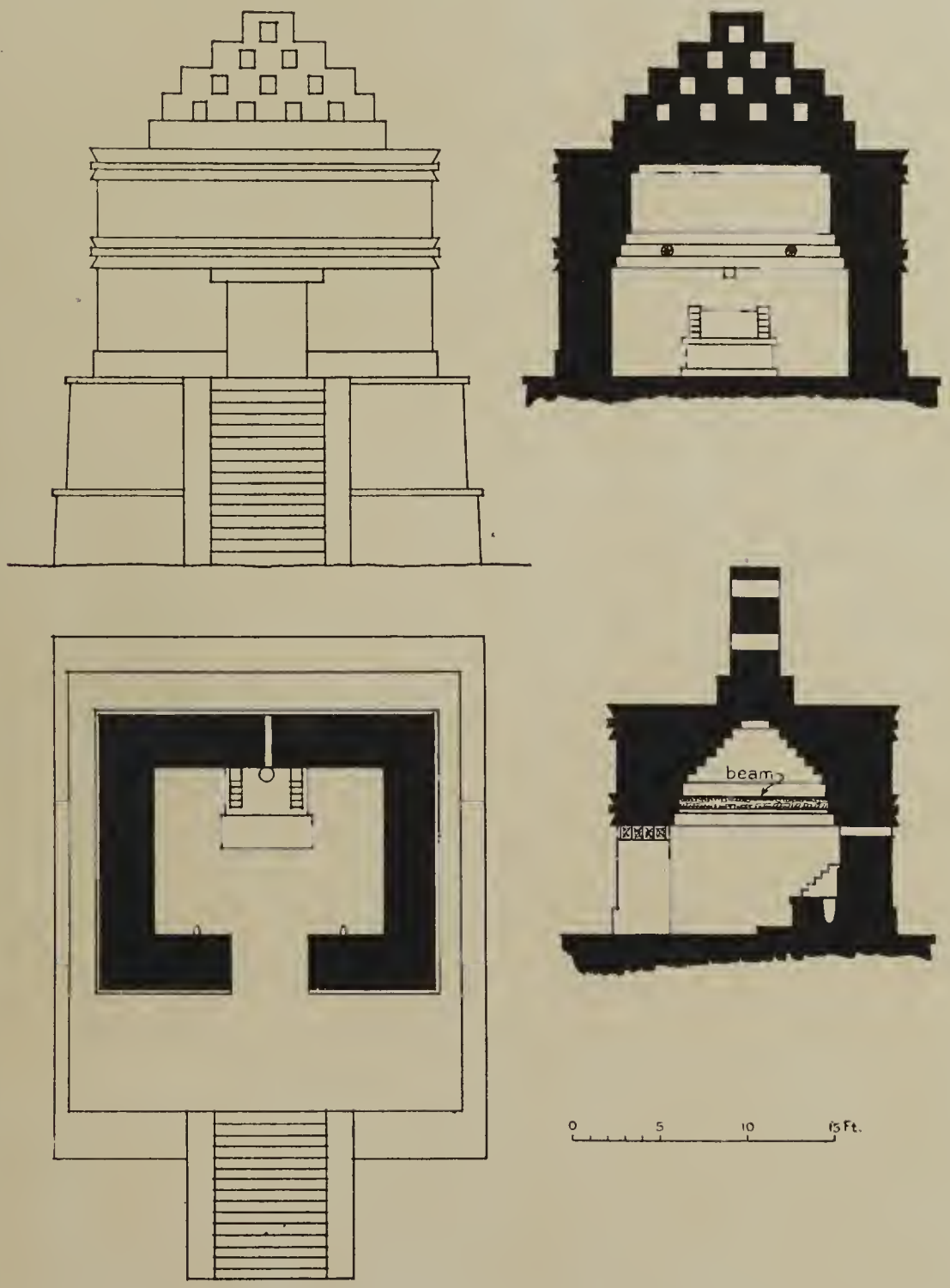


Fig. 136.—Plans of structure 1, Xelha.

Architecturally, Xelha resembles Tancah more closely than any other site. Flat-ceiling buildings of the palace type and stone columns are not found. Shrines are exceedingly common, and are either set on high-terraced substructures, as at Tancah, or placed on low platforms with vertical sides, as at Tulum, or are built at the base of high mounds, which once may have been terraced and carried build-

ings on their summits, but which to-day are conical heaps of stone. This practice appears again at San Benito and San Miguel, on the island of Cozumel. Moldings are usually a single rectangular string, but examples of the three-member molding are found. At least two buildings had castellated roof-combs. No traces of sculpture, stucco bas-relief, or frescoes were seen, although several buildings were apparently painted in solid colors. The reasons for believing the buildings at Tancah older than those at Tulum have already been explained. In the same way we believe that Xelha was built during the period of the League of Mayapan

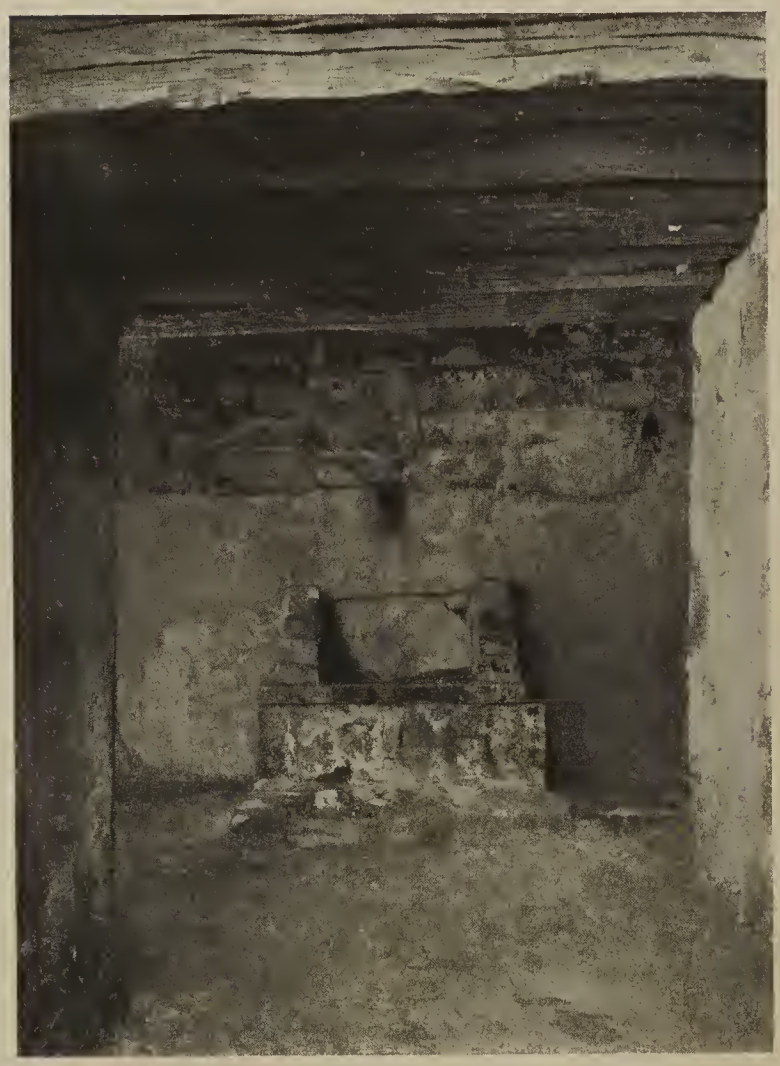


FIG. 137.—Interior of structure 1, Xelha.

FIG. 138.—West façade of structure 2, Xelha.

and persisted with but little change during the period of Mexican ascendency until the arrival of the Spaniards. It should be borne in mind that Xelha is spoken of by these invaders as a relatively small and unimportant city—a meager description, but one which fits the ruins under consideration.

Structure No. 1.—The best preserved and finest building at Xelha is shown on plate 27; it stands in the center of the east side of the plaza, with the doorway facing west. Stylistically, this is the oldest building yet seen on the east coast, differing from the usual temple type in its general proportions, moldings, vaulting, thick walls, roof-comb, and elaborate altar. In these details it resembles the architecture of central Yucatan, particularly the House of the Pigeons at Uxmal, and we therefore date it from the time of the League of Mayapan.

The substructure rises in terraces with a rectangular cornice at each level, like others already described at Tancah. A huge tree growing out of the east side of the substructure has recently been uprooted, thus forming a large cavity under the back wall, which threatens the speedy destruction of the building. The stairway, on the west side, is flanked by balustrades and has no peculiarities.

The base of the exterior walls of the building shows a slight offset a foot and a half from the ground, which corresponds to the step which surrounds most east-coast buildings and is perhaps the prototype of it. The offset differs from the step, however, because the latter raises the floor-level of the building, while the former merely breaks the line of the walls without increasing the height. There are two sets of moldings, each of the three-member variety; the upper bands form a cornice at the top of the façade, while the other molding is placed at half the height of the building—an arrangement typical of central Yucatan but not of the east coast. The castellated roof-comb rises in five tiers, of which the highest has fallen. The four upper tiers are pierced from back to front by rectangular openings.

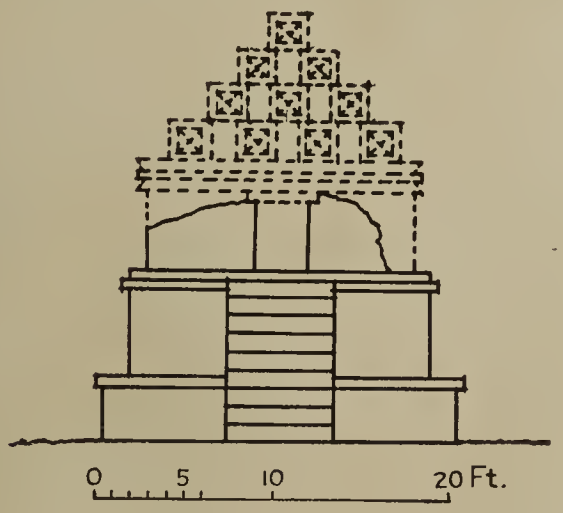


Fig. 139.—Restoration of structure 2, Xelha.

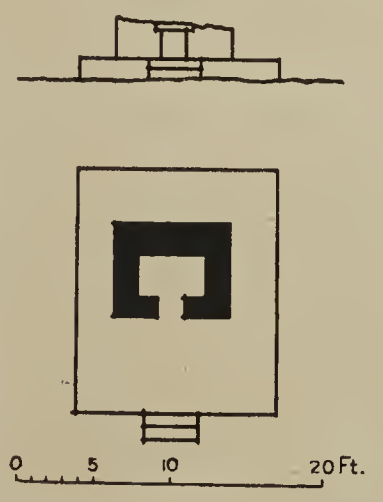


Fig. 140.—Structure 3, Xelha.

The doorway leading to the single chamber is capped on both sides of the wall by a sunken panel, the only typical east-coast feature in the whole building. Four nicely cut beams, of wood pronounced by our workmen to be *cirocote*, form the lintel. On each side of the doorway on the interior wall there are stone pegs.

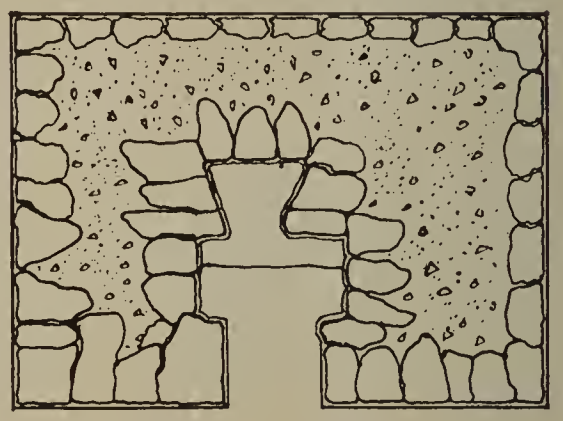
The vault is distinguished by the unusual regularity of the overstepping courses, the projecting corners of which are not cut off, as is usually done. The first three tiers project from all sides of the room, but above this the ends rise vertically for the distance of five offsets on the front and back walls. At the top of the vault there is one more projecting course on all four sides, and the remaining open space is closed by five large capstones. Two wooden beams which braced the vault have disappeared. The walls, both exterior and interior, are neatly plastered, but apparently were never painted.

In the center of the back wall is a large altar with the usual window above it (figs. 8 and 137). This altar is an oblong masonry block with a rectangular cornice and is approached by a low step. The upper surface is connected with the back wall by terraced wings and in the center is a deep, round hole. We at first thought

that the base of an idol had been inserted in this hole, but found that it contained several carbonized corn-cobs and therefore might have been a receptacle for offerings. Nearby on the floor was a potsherd on which the marks of coarsely woven cloth had been impressed while the clay was still soft.

Structure No. 2.—This edifice stands south of the building just described, and, although badly ruined, was apparently of the same type. The view in figure 138 shows the front elevation. Traces of the terraced substructure are visible, also the doorway and part of the front walls. An examination of the débris led us to the conclusion that there had once been a roof-comb of the castellated variety, decorated by square perforations with diagonal cross-bars. A restoration of the probable type is suggested in figure 139. The top of the roof-comb was found actually intact on the ground below, as well as other fragments, but the molding is purely conjectural. The panel over the door can be seen on the standing wall.

FIG. 141.—Structure 6, Xelha.



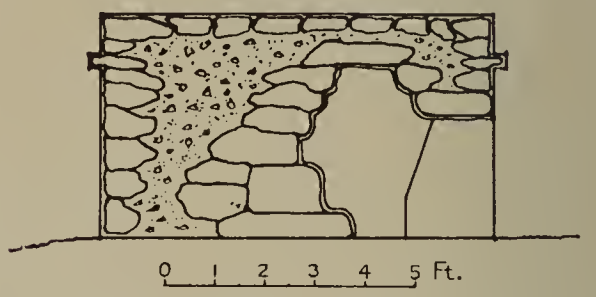


FIG. 142.—Plan of the shrine of structure 6, Xelha.

Structure No. 3.—A low terrace facing the plaza runs from structure 2 to the south corner. Structure 3 stands on it next to structure 2. The former is a shrine standing on a rectangular platform of its own with two steps on the south side. The mortar has been washed away, the roof has fallen, and only crude stone walls less than a yard high remain. The doorway, which is intact and is less than 2 feet high, had a sunken panel above it.

Structure No. 4.—A low circular platform with no trace of construction on top.

Structure No. 5.—At the south corner of the plaza is a rectangular mound facing north. The height is 5 feet. On top is a badly ruined, small temple 13 feet long and 7 feet wide, with a door 2 feet wide in the north wall.

Structure No. 6.—This consists of a large, formless mound of unshaped stones, at the base of which is a shrine. The mound is about 20 feet high. There are no

signs of construction on top nor, indeed, any evidence that its sides were ever faced. The shrine has a single rectangular molding. The side walls are 4 feet thick and the room is roughly a yard in each dimension. At the back is a low step,

FIG. 143.—South side of structure 11, Xelha.

behind which there is a recess in the wall. On each side of this are small benches. The interior stonework is excessively crude, especially the vaulting. The exterior walls are neatly covered with plaster, of which there are several coats. In front of the shrine are two rectangular altars, each 2 feet square and half a foot high.

Structure No. 7.—At the southwestern corner of the plaza there is a small subcourt opening off the larger inclosure. This is inclosed by structure 7 on the south, structure 8 on the west, and structure 9 on the north side. Structure 7 is a small, featureless temple measuring 12 by 14 feet, with a single doorway on the north side.

Structure No. 8.—This is a low platform mound, at the back of which is a small rectangular mass of masonry. In front of this is a T-shaped altar.

Structures Nos. 9 and 10.—Structure 9 is a low platform on the north side of the subcourt just mentioned. Structure 10 is a small platform standing north of 9 and connected with 11 by a narrow elevation, the nature of which is not clear.

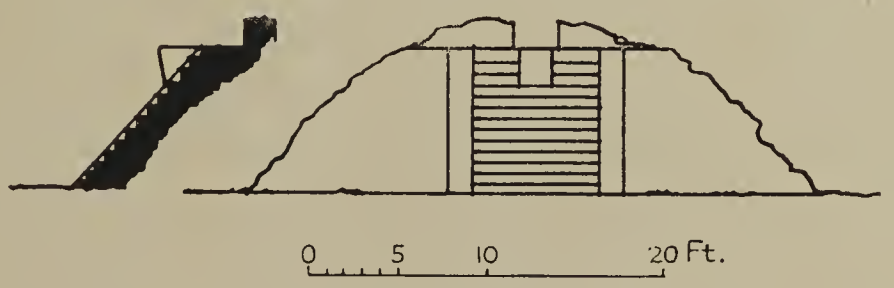


FIG. 144.—South elevation of structure 11, Xelha.

Structure No. 11.—Projecting into the main plaza on the center of the west side is a platform mound 8 feet high, which faces south. The most important feature is the stairway, in the center of which, on a level with the upper platform, is a masonry pier like that seen at Tancah (structure 1). The stairway itself is narrow and was flanked by rectangular balustrades, now destroyed. The mound is

now shapeless, but probably was once terraced. On top are traces of a building which has been shattered by a *ramon* tree.

Structure No. 12.—North of structure 11 lies a low terrace which should perhaps be considered a large platform mound.

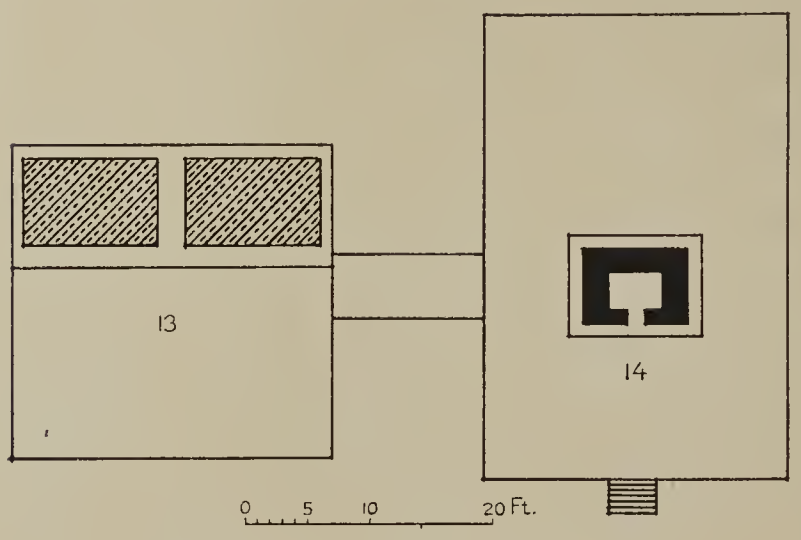


FIG. 145.—Structures 13 and 14, Xelha.

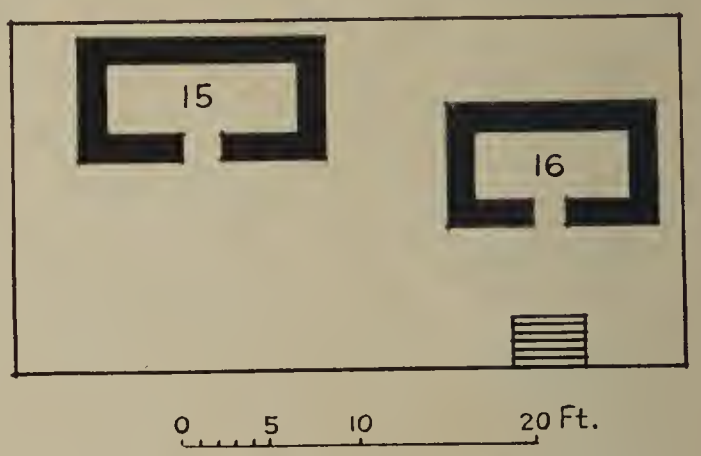


FIG. 146.—Structures 15 and 16, Xelha.

Structure No. 13.—At the northwest corner of the plaza are two platform mounds joined by a wall 5 feet wide and 12 feet long. The southernmost mound (13) has a low terrace running across the back. On this are two low, rectangular masses of masonry. The whole construction is similar to several encountered at Tulum, such as structures 23, 27, and 49.

FIG. 147.—Structures 19 to 22, Xelha.

Structure No. 14.—This stands in the extreme northwest corner of the plaza. Like 13, it is a platform mound, but on the top is a small shrine, the roof of which has fallen. Unlike most of the buildings of this class at Xelha, it is raised on a step.

Structures Nos. 15 and 16.—The north end of the plaza is occupied by a platform mound on which are two unimportant buildings. At the west end of the south side of the substructure is a small stairway sunk in the wall.

Structure No. 17.—This is a large mound so badly ruined that its nature could not be determined.

Structure No. 18.—This is a low platform mound on which is a T-shaped heap of masonry.

Structures Nos. 19 and 20.—Structures 19, 20, and 21 all stand on a common terrace on the east side of the plaza. Structure 19 is a well-built shrine with two rectangular moldings. The exterior is smoothly finished with plaster, but the interior is rough stonework. There are traces of red and blue paint on the lintel. Against the south wall a second shrine (structure 20) was built at a later date. The construction was very much lighter and the mortar poorer, so that little remains to-day except a heap of stones.

Structure No. 21.—This small temple stands on the south end of the platform with 19 and 20. The masonry is of a better class than is usual on the east coast, but the back wall has been demolished by a huge cedar tree which almost completely fills the interior. The exterior walls have received several layers of plaster, the

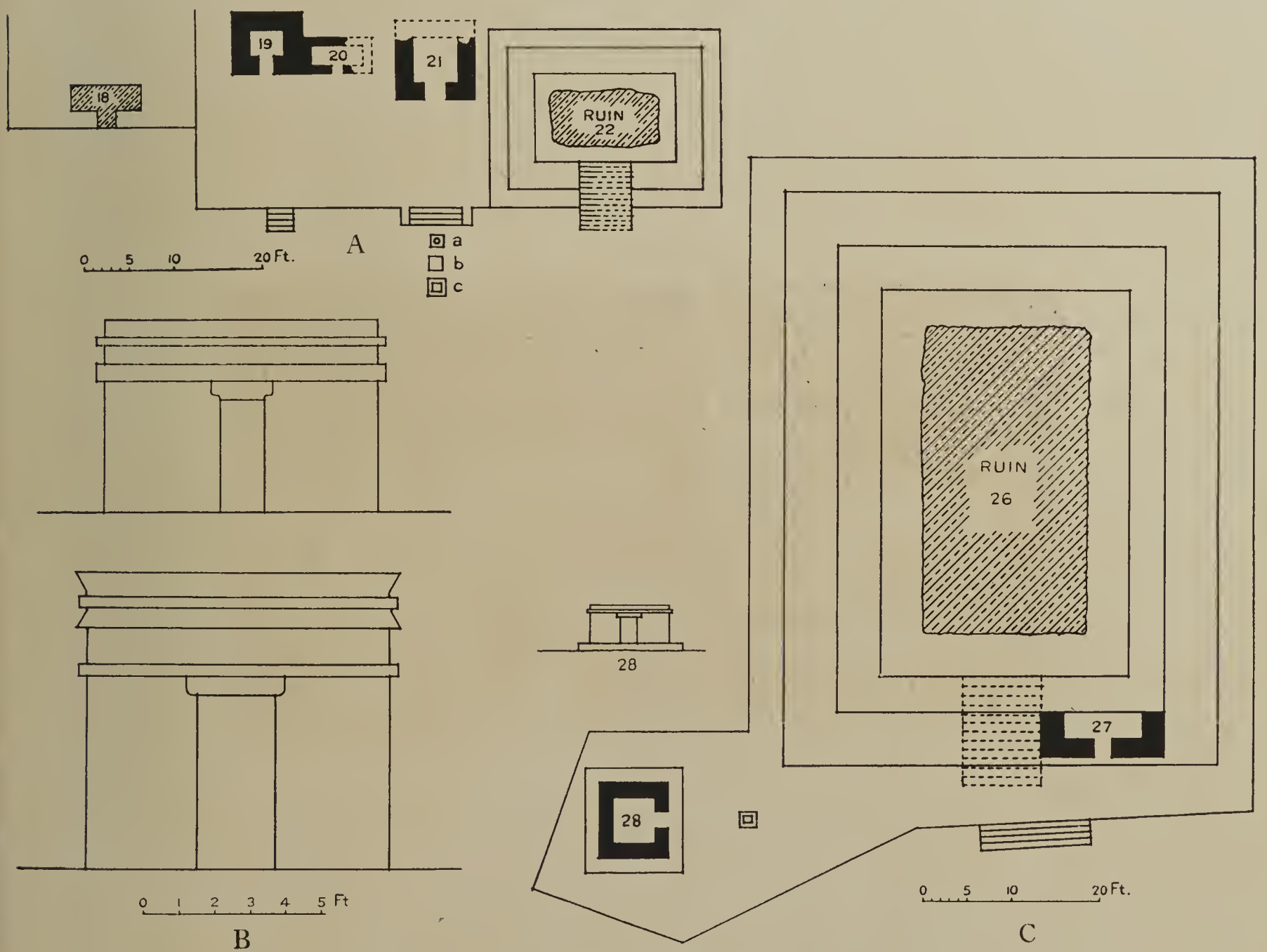


FIG. 148.—Xelha: A, ground-plan of structures 18 to 22; B, elevation of structures 19 and 21; C, ground-plan of structures 26, 27, and 28.

most recent of which was painted bright blue. There are two moldings. The upper is the three-member type of pure Maya form, while the lower is rectangular, a combination which suggests a transition from Maya to Nahua forms. The vault was evenly terraced, like that in temple 1. At the north and south ends of the room, which were not vaulted, there is a clear-cut offset at the height of the spring of the vault.

In front of temple 21 is a small flight of balustraded stairs. Below the stairs are three small altars 2 feet square and a foot high, beyond which is a low altar 5 feet square.

Structure No. 22.—A three-stepped pyramid 10 or 15 feet high stands to the south of the buildings just described. There is a stairway on the west side towards the plaza. On top there was once a building, but it has completely crumbled away. However, traces of terracing on the substructure can be seen at the south and west sides. So much of the ground plan as can be determined is shown on figure 148, A.

FIG. 149.—Rough sketch of structures 26, 27, and 28, Xelha.

Structure No. 23.—This is a rectangular platform 3 feet high. At the east end there are traces of masonry which perhaps are the remains of a shrine or small temple. There are stairs on the west side.

Structure No. 24.—This also is a rectangular platform mound. It is 4 feet high and has stairs on the west side. There is no trace of construction on top.

Structure No. 25.—In front of temple 1 is a platform mound 12 feet square, ascended on the east and west sides by two flights of four steps each. The position and type of this mound recall structure 8 at Tulum, which also is set in front of the steps of the principal temple.

Structures Nos. 26, 27, and 28.—These three structures form a group which, on a miniature scale, suggests an acropolis of the type found in the Maya cities of the Peten. The comparison is perhaps unfair, because 26 is so badly ruined that its nature can not be determined without excavation. Its present aspect is seen from the rough and perhaps inaccurate sketch of figure 149. Structure 26 to-day is a large mound on top of which there was once a building (fig. 148, C). On the north side of 26 is a platform with stairs descending to the ground. Above this platform, on a small terrace, stands 27, which is a large shrine. The roof and upper part of the walls have fallen, but the door is still complete.

At the east end of the platform, fronting 26 and 27, is an irregularly shaped projection on which stands 28. This also is a shrine, still intact, though about

to fall. The vault is just over 3 feet high. There is a single rectangular molding. Eight feet in front of the door is a small square altar.

Structure No. 29.—To the north of the plaza several scattered mounds were observed, one of which is included on the map. This appears to have been a terraced pyramid, but is now merely a pile of débris.

ACOMAL.

The most northern settlement of the independent Indians apparently is the small village of Acomal, which lies a couple of leagues north of Xelha Bay. The inhabitants of this town visited us at Tulum and consented to work for us during the greater part of our time there. From these men we learned of the ruins of Xelha, and they also stated that near their own village were remains of equal importance. Unfortunately, we had no opportunity to confirm this report.

PLAYA CARMEN.

Playa Carmen is a little Indian village on the coast, 8 leagues south of Puerto Morales. The Carnegie Institution expedition of 1918 passed a day here and noted several ancient edifices. About 200 yards south of the modern houses are two buildings. The smaller of these (structure 1) has a single doorway in the

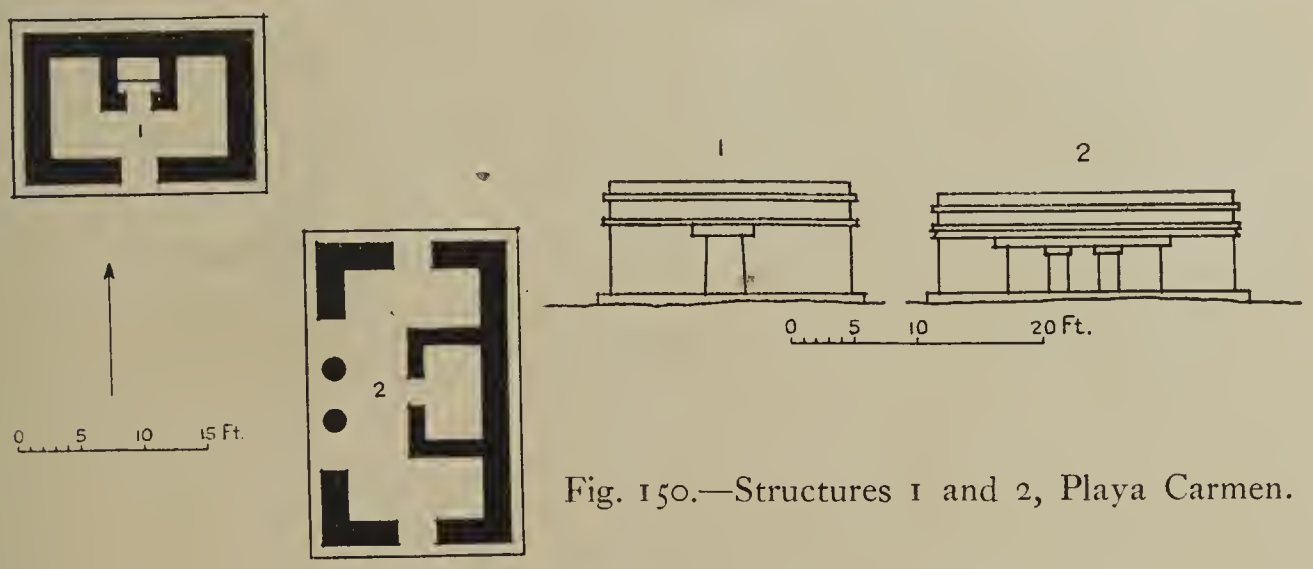


Fig. 150.—Structures 1 and 2, Playa Carmen.

south façade and simple rectangular moldings. Within there is a room containing a sanctuary. The sanctuary is encircled by a rectangular molding and contains a bench against the back wall. Structure 2 is of the same general plan, but is larger. The principal entrance faces west and is divided by two round columns; there are also doorways in the north and south walls.

On the southern edge of the modern village is a pyramid 15 feet high, ascended by steps on the east side. The summit shows no trace of a building. North of the houses are two single-roomed edifices which stand side by side on the same platform, with their principal façades facing the sea. One of these is now used by the Indians for drying and curing tobacco.

NISUCTE.

This ruin was discovered by the Le Plongeons in 1877 and has not since been visited by archæologists. No adequate description has been published, but Mrs. Le Plongeon recorded a few lines, as follows:

"There is another of these strange cities farther down the coast, called Nizucte. . . . The largest building proved to be a diminutive temple, at the entrance of which were two enormous snake heads made of concrete; they were embraced and encircled by gnarled roots that looked like dark skinned serpents entwining the mineral representations of the same reptiles. Near by we found two large human legs, also concrete, and a square pedestal one foot high, on which was a symbol of the Phallic worship, two lobsters and a small turtle, all made of concrete. The doorway of the temple was three feet high and one and one half wide. The structure consisted of large, well-hewn stones, and the ceiling formed a triangular arch with capping stones, though outside the building was square."

EL MECO.

The ruins of El Meco stand near the shore, a little south of Mugeres Island. They were discovered by Le Plongeon (1877), who has left no adequate account of

Fig. 151.—Temple at El Meco (A after Arnold and Frost).

his visit. They were seen by Holmes (1895), who was able to remain there only a few hours, but has produced the most satisfactory report yet published. Arnold and Frost also touched there and have published a photograph of the chief temple. Finally, the city was explored by the Carnegie Institution expedition of 1918.

The principal edifice at El Meco is a badly cracked terraced pyramid surmounted by a small ruined temple. The main aspect faces seaward and has been whitewashed by the Mexican Government to serve as a landmark. The substructure, 25 feet high, rises in four terraces and is ascended by a steep stairway

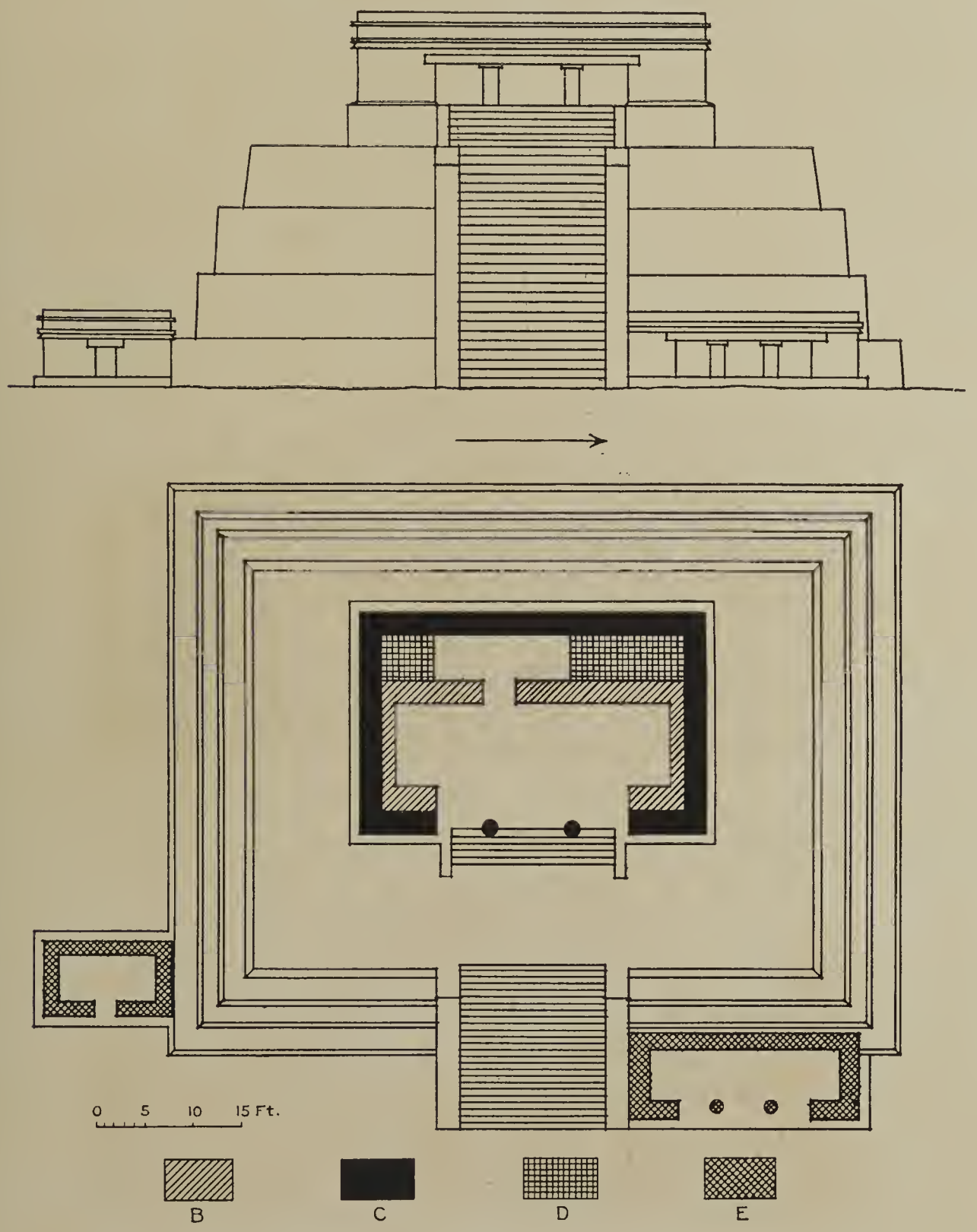


Fig. 152.—Ground-plan and restored elevation of temple, El Meco.

with balustrades. At the base are two small unsymmetrical buildings which recall those in front of the Castillo at Tulum, which they resemble also in ceiling construction and moldings. As at Tulum, the northern building has a flat beam-and-rubble ceiling and a two-member molding, while the south building has a vaulted

ceiling and two moldings, one a rectangular band and the other the common two-member type. The northern building has two columns in the doorway.

The building on the summit, indeed the whole edifice, shows several periods of construction. Holmes[1] has recorded the fact that the pyramid itself forms a casing around the walls of an older building, now filled in solid, the presence of which was disclosed by the peeling of the masonry on the northwest corner of the pyramid, as in the Monjas at Chichen Itza. The approximate relation of this older building to the rest of the structure is shown on figure 153, A. It will be seen that it was filled in solid, completely surrounded by the terracing of the pyramid, and a small base erected above it, on which stood the next construction. This probably was the room marked B on figures 152 and 153. It had a flat ceiling and the doorway may

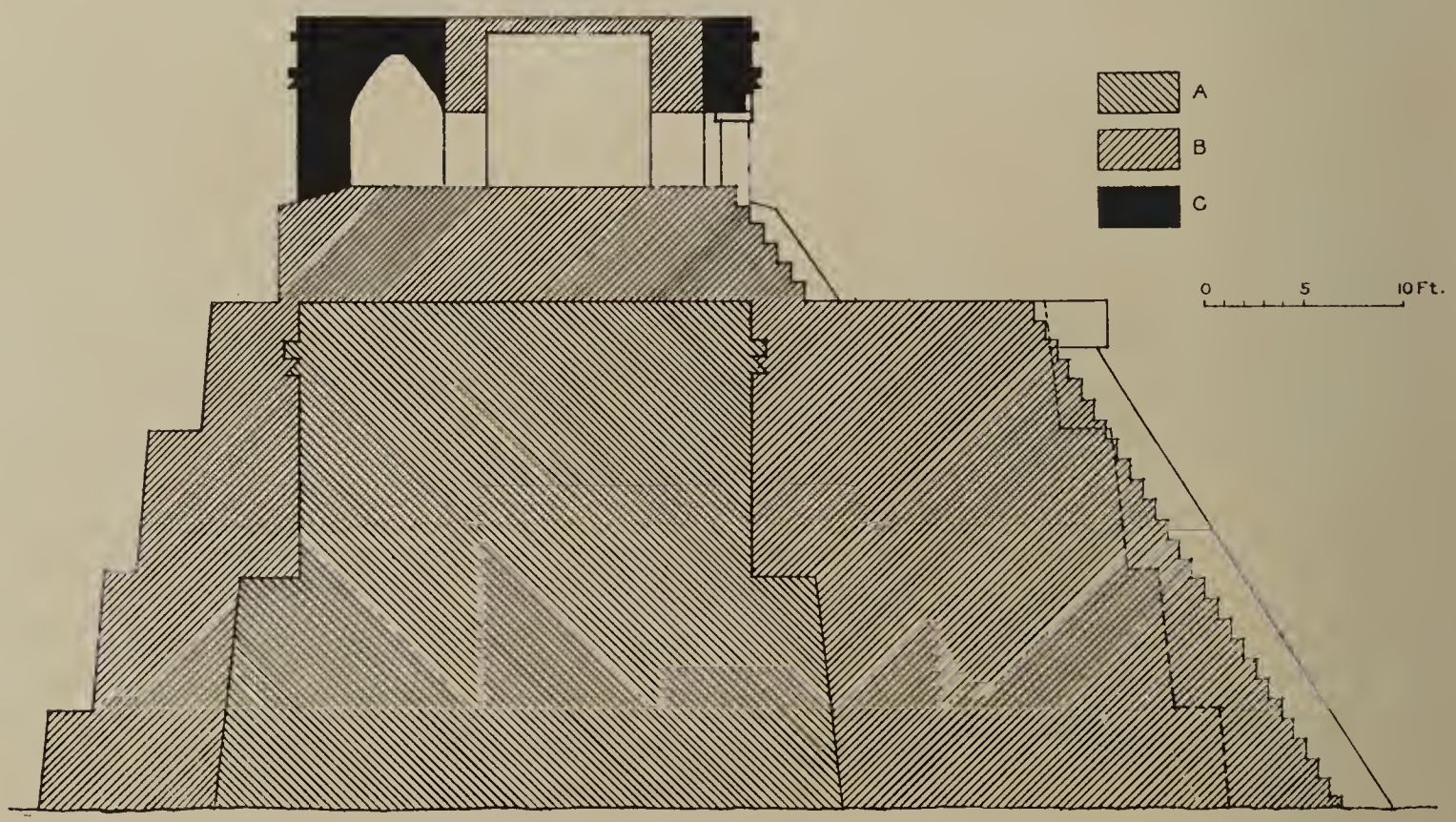


Fig. 153.—Cross-section of temple, El Meco.

have been narrower than at present. The next step was to completely incase the flat-ceiling room in masonry, as was done in the lower story of the Temple of the Frescoes at Tulum. This masonry (shown in solid black on the plans) is in contact with the older walls on three sides, but forms a new room at the rear of the building. This room is crudely vaulted. Finally, the ends of the vaulted room were filled in with masonry, evidently to strengthen the vault. The age of the small edifices at the bottom in relation to the rest of the structure is not clear, but they probably antedate the building of the vaulted room in the upper temple.

This building as a whole is very similar to the Castillo at Tulum. In both places an older building set on a fair-sized substructure was filled in. At Tulum only the central portion was thus blocked up, leaving rooms on either side which form the second range. At El Meco the older building was completely filled in, as

[1] 1895, p. 72.

it was not long enough to form wings like those at Tulum. In each case an upper story was erected on the base thus formed and two small buildings were added on the ground-level. We judge, however, that the upper story at El Meco is older than that at Tulum, because the latter is vaulted, while the former was partially built before the flat ceiling was abandoned and the vault reintroduced. At all events, the building at El Meco seems more crudely constructed than, and the proportions of the façade are by no means as pleasing as, those of the Castillo at Tulum.

In front of the temple we have described is a badly ruined mound, which can be seen in figure 151, A. It corresponds to similarly placed mounds at Xelha, Tulum, Chacmool, etc. This mound and the pyramid stand in the center of a courtyard the sides of which are formed by buildings which have not yet been individually surveyed. Holmes (*op. cit.*) writes:

"Possibly there has never been a building on the north side facing the marsh, but on the west and east sides there have been long buildings with heavy walls and rows of round columns which still stand in many cases to their full height—some six or seven feet. These columns doubtless supported the roofs of the buildings which were, in places at least, thatched,[1] as there is not enough débris to indicate the existence of stone arches. On the south side there are a number of ruins, mostly of a similar character but apparently not symmetrically arranged, serving to enclose the court somewhat completely on that side. In front of the pyramid and 20 feet from the base of the stairway is the ruin of a small temple or shrine, like those seen on the islands, approached from the east and west by steps four or five in number. At the south east angle of the court, and connected with the main eastern ruin, is the base of a temple with several rooms, and a stairway the sides of which were finished with serpent balustrades, the large heads resting on the ground as in some better known Yucatec examples. We were informed that other ruins are scattered through the forest, indicating a settlement of importance, but there was no time to search for them."

FIG. 154.—Objects from a grave at Kantunil (after Stephens).

KANTUNIL.

This site has never been visited by an archæologist, but, while at Chemax, Stephens[2] learned—

[There] "were several mounds, in one of which, while excavating for stone to be used in building, the Indians had discovered a sepulchre containing three skeletons . . . .

"At the head of the skeletons were two large vases of terra cotta, with covers of the same material. In one of these was a large collection of Indian ornaments, beads, stones,

[1] In the light of the common use of the beam-and-rubble ceiling, we believe that this type of roof is more probable than thatch, although the latter is by no means impossible.

[2] 1843, vol. II, p. 341.

and two carved shells, which are represented in the following engraving. The carving on the shells is in bas-relief, and very perfect; the subject is the same in both. . . . The other vase was filled nearly to the top with arrow heads, not of flint but of obsidian. . . ."

The presence of obsidian blades recalls similar finds in British Honduras and eastern Peten, where such objects, usually of eccentric shapes, have turned up in small hoards. Their use is unknown, but can not well have been utilitarian.

MUGERES ISLAND.

The island of Mugeres, a few miles away from El Meco, is a narrow strip of land several miles long. The low northern end is joined to the neighboring island of Blanca by a shallow, surf-beaten reef, but towards the south the land obtains a considerable elevation and terminates in an abrupt cliff. On the west side of the island are the town and harbor of Dolores, for centuries the resort of pirates and smugglers.

FIG. 155.—Mugeres Island: A, southern point; B, temple.
(After Holmes.)

The description of the Punta de Mugeres left us by Bernal Diaz del Castillo has been previously quoted (p. 14). Another account of the island,[1] written in 1579, declares that "in it there is no population although it appears that the said island was peopled in ancient times for there are some antique edifices."

The ruins now known stand at the extreme southern tip of the island (figs. 155 and 156, c) and were first described by Stephens and Catherwood. The

[1] *Relaciones de Yucatan*, vol. II, p. 173.

next account was written by Salisbury on data furnished by Le Plongeon, whose survey was made in 1877. The best and most satisfactory description is from the pen of Holmes, who went to Yucatan in 1895. Finally, the site was visited by the Carnegie Institution expedition of 1918.

The principal temple stands on the actual edge of the cliff and one end has fallen into the sea, which is constantly undermining the land. The building is highly

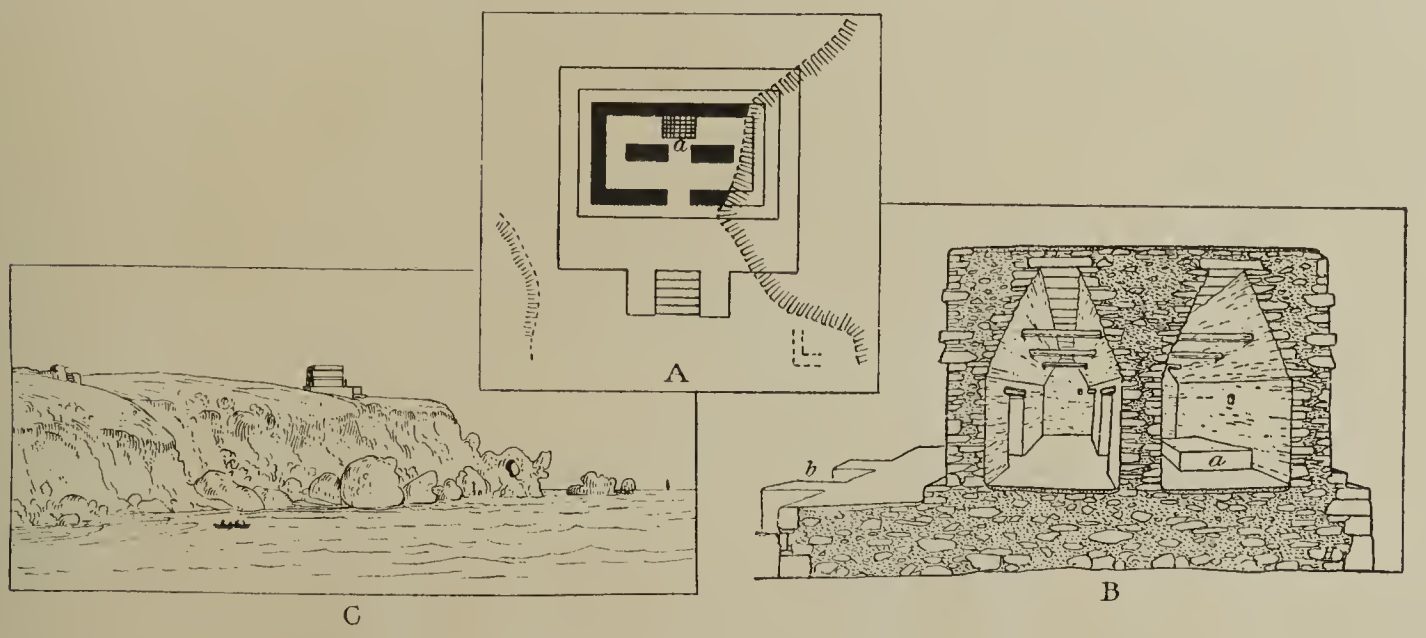


FIG. 156.—Temple on Mugeres Island (after Holmes).

conspicuous from coasting-vessels, which customarily pass close to the shore at this point. It stands on a low platform with a wide cornice at the top, ascended by stairs rising between unusually massive balustrades. Holmes comments on the unusual size of some of the stone blocks in the substructure. The façade is quite typical of the east coast and has a sunken panel over the door and two moldings, one rectangular and the other with two members. The nature of the interior and the character of the vaulting are admirably brought out by Holmes's drawing on figure 156, B. The sides of the vault are unusually flat and are braced by wooden beams.

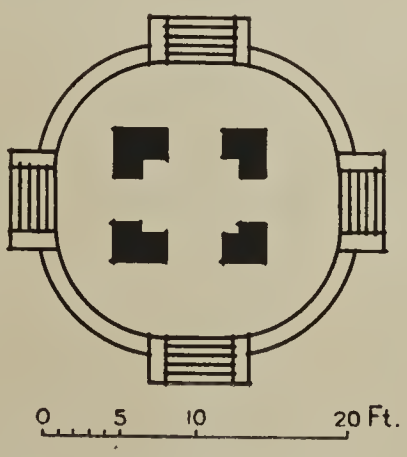


FIG. 157.—Ground-plan of small temple, Mugeres Island.

At the time of Le Plongeon's visit a small rectangular altar stood 4 meters in front of the steps. Near this was discovered the large incense-burner of which we show fragments on plate 9, *g*, *j*.

Another and more badly ruined building, which stands a few hundred feet to the northwest, is shown on figure 157. The ground plan which we publish differs from the plans of Holmes and Le Plongeon in the number of stairways and the circular outline of the substructure. This platform is over 6 feet high and supports a building so badly ruined that no more than the doors and corners are now discernible.

On the southwestern shore of the island is a great dump of conch-shells. On top of the slope formed by the shells are the foundations of a small stone house measuring 12 by 9 feet, with a doorway 2.5 feet wide in the west wall.

CANCUEN.

The island of Cancuen or Cancun, a narrow strip of sand with occasional outcroppings of limestone, is 16 miles long; it lies to the south of Mugeres Island and a considerable distance north of Cozumel. The largest of the several groups of ruins was first noted by Holmes. The only map yet published, which we reproduce with the addition of numbers to designate the buildings, was brought out by Arnold and Frost (fig. 158). The island was later visited by an expedition of the Peabody Museum. Their survey, when published, will cover the ruins much more thoroughly than we can attempt here.[1] Our description of the ruins is based on a visit paid by the Carnegie Institution expedition of 1918 and on previously published notices.

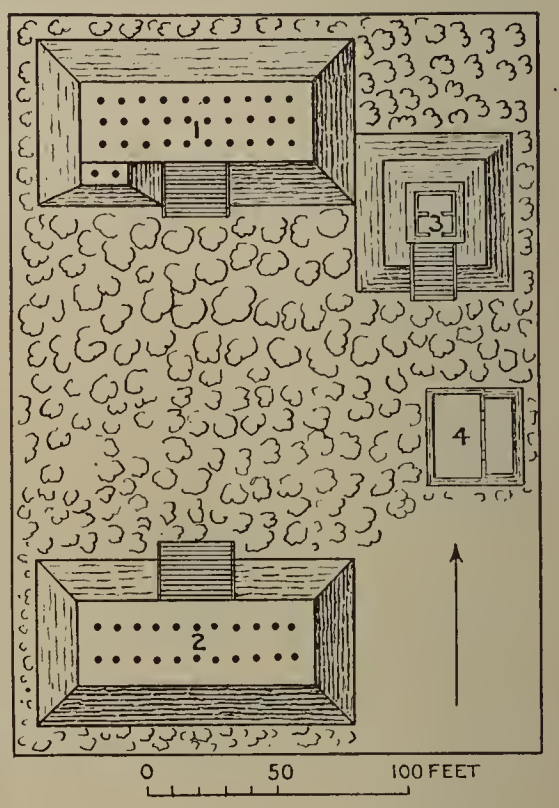


FIG. 158.—Plan of ruins, island of Cancuen (after Arnold and Frost).

Group 1.—The most important group of buildings is situated, according to Holmes, on the west side of the island, about a mile from the southern end. The two largest edifices (structures 1 and 2) are colonnaded halls of considerable size. Although the plan on figure 158 shows no walls, the description speaks of "fallen walls," and Mr. S. G. Morley remembers seeing them, although he took no notes on the buildings. According to Arnold and Frost[2]—

> [Structure 2] "stood on a stone platform 90 feet long and 33 feet wide. The building itself measured 60 by 17 feet, and in two rows down the centre were immense pillars, many monolithic and some as much as 8.5 feet high . . . . Around the platform on the ground level was a paved walk 16 feet wide, now buried under fallen walls. The building on the north (structure 1) was no better preserved. It was exactly the same except that it has three rows of pillars . . . ."

This account does not explain the two pillars at the southwest corner of the building, a feature also observed at Chacmool. Structure 3 is a terraced pyramid with a badly ruined house on the summit. Its exact nature has not yet been determined by any visitor. Structure 4, however, we shall describe in more detail, as it was partially measured in 1918.

This building stands on a rectangular platform about 4 feet high and faces westward towards a small courtyard. The façade is of unusual interest, for it exhibits a battered base like that found on the upper story of the Temple of the Frescoes at Tulum; the lintel and door-jambs are recessed like those in the same building at Tulum. These two edifices are the only known east-coast examples of this treatment of the lower mural zone. The molding of structure 4 is unusually

[1] I am indebted to Professor Tozzer for an opportunity to examine Mr. Merwin's field notes, but have not made use of the material contained therein.

[2] 1909, p. 150.

heavy and is one of those cases in which it is difficult to decide whether we are dealing with a three-member molding, like structure 1 at Xelha, or with a two-member molding surmounted by a wall-space which slopes outward. Another example of this type is seen on the Temple of the Diving God at Tulum. The upper wall-space between the doors contains a niche which was once occupied by a stucco figure. The chief feature of the interior is the succession of steps in the vault. The back room has fallen in, but has been restored on figure 160.

A

B

Fig. 159.—Cancuen: A, west façade of structure 4; B, ruined building in second group.

Fragments of the figure in the exterior wall-niche, including the head, were discovered and published by Arnold and Frost,[1] who, to secure a better light for a photograph, carried fragments to the steps of the near-by pyramid. The head was discovered there and rephotographed in 1918. It is an important piece, because it is the only example of its class from the east coast on which the features have not been mutilated. The face itself, which appears similar to some of the large pottery heads, is surmounted by a large head-dress containing an animal

[1] *Op. cit.*, pp. 140 and 240.

head. The body has apparently been completely broken up, but the whole very likely represented the Diving god, of which so many examples have been seen at Tulum.

Group 2.—In an open field some distance south of the ruins described is another group of three buildings, one of which is shown on figure 162. It has a square column in the doorway and three round columns in the center line of

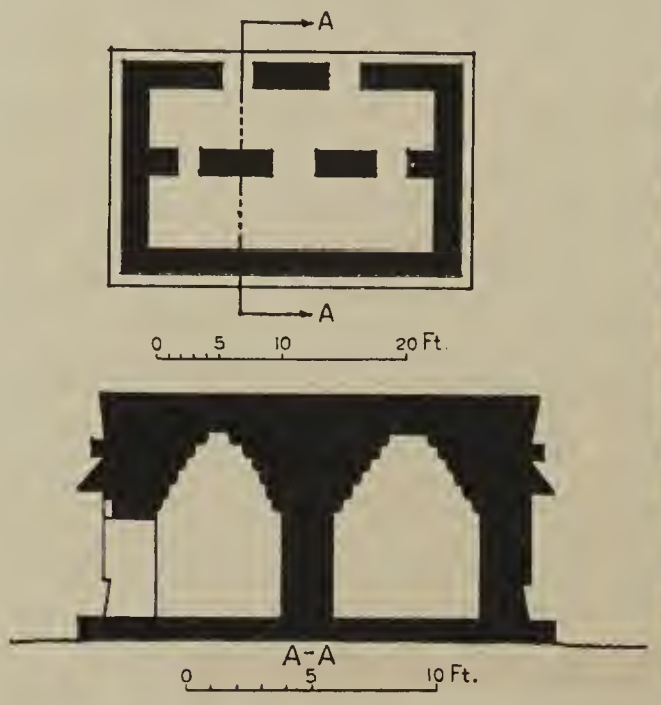


FIG. 160.—Plans of structure 4, Cancuen.

FIG. 161.—Fragments of stucco figure, Cancuen.

the single chamber. Both these features are rare. Another unusual building is shown in figure 163. It is badly ruined and the elevation has been largely restored. Its length is about 90 feet.

In addition to the ruins described, there seem to be many others. Arnold and Frost mention a mound on the north end of the island and "another small ruin" on Nisuc Point at the south end. Holmes apparently also saw other buildings. Merwin discovered several groups, yet to be published, as large and important as those we have described. The name of one of these, Tamul, is mentioned in Howe's report on Tulum.

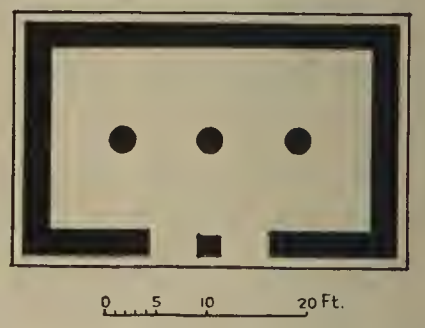


FIG. 162.—Ground-plan of a building, Cancuen.

COZUMEL ISLAND.

Cozumel is roughly rhomboidal in shape, and there are said to be ruins on each of the corners, as well as in the interior. The land is composed of stratified layers of Recent limestone and rarely rises more than 30 or 40 feet above the sea. The modern population is found, for the most part, in the towns of San Miguel and El Cedral, at the northwest and southwest corners of the island, respectively.

According to the Motul dictionary, the aboriginal name was *Ah-cuzamil-peten*, "The Swallow Island," of which the present name is a Spanish corruption. The epithets *oycen* and *oycib* were also applied to it.[1]

[1] *Cen* means "ornament" and *cib* means "wax, candle, copal"; *oy* is an interjection. I am unable to supply a satisfactory translation of these terms.

During the ascendency of the Cocomes the island of Cozumel is said to have been subject to them, but when the Spaniards arrived it had a lord of its own, Ah Naum Pat, who was extremely helpful to the Spanish cause.

In the days of its gentility, Cozumel was a great religious center and place of pilgrimage, and some writers, such as Cogolludo, say that it occupied a position similar to Rome in the Catholic hierarchy. Three deities were especially worshiped on this island: *Teel Cuzam*, *Ahulneb*, and *Ixchel*. *Teel Cuzam*, the "Swallow-legged," is the divinity from whom the island takes its name. We know nothing more about him, and I have searched the codices and wall paintings in vain for a figure answering this description. *Ahulneb* or *Ahulané* was "very peculiar and they painted him with an arrow" (in his hand).[1] So many and evidently different deities in the codices answer this description that again identification is impossible.

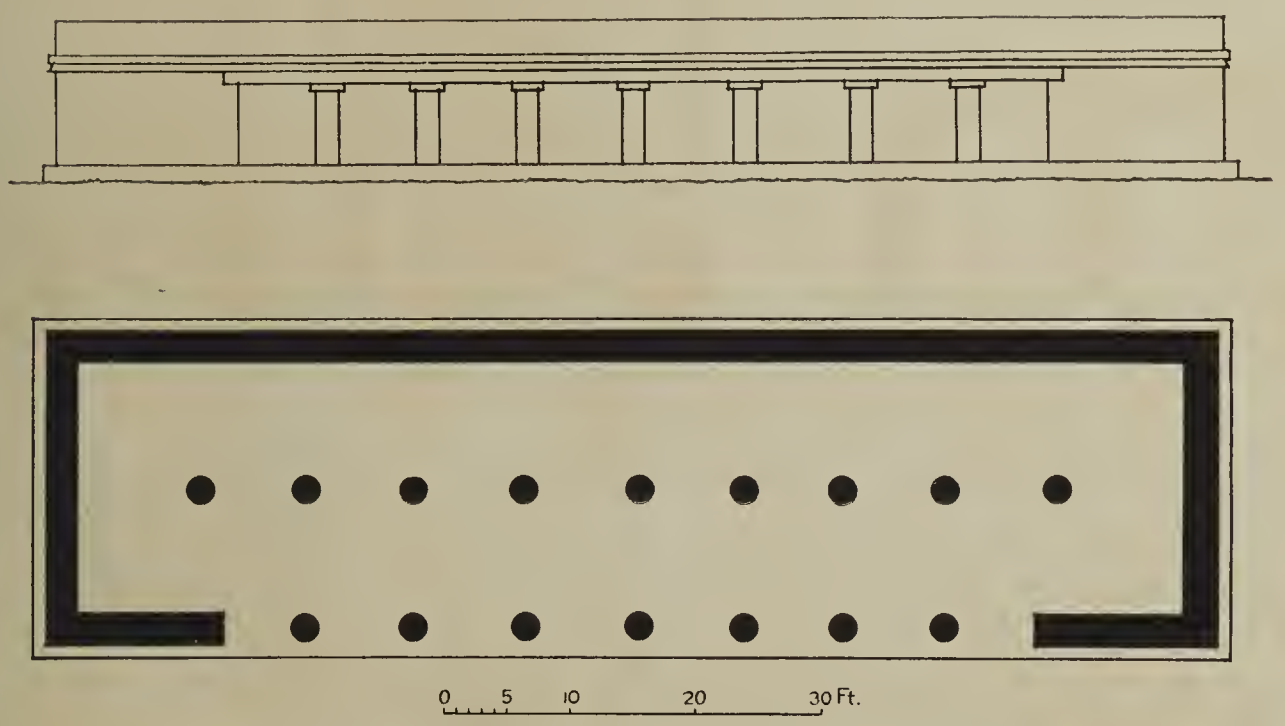


FIG. 163.—Plan and elevation of a building, Cancuen.

Ixchel, "the Lady of the Rainbow," is the wife of Itzamna and goddess of Medicine. To her shrine on Cozumel pilgrims flocked from all parts of Yucatan and even from distant Tabasco and Chiapas. The supplicant, it is said, was sent to consult the *alkin* or priest, who in turn consulted the idol of the goddess, which gave the proper answer by means of some hidden mechanism. De Landa[2] says that *Ixchel* was especially invoked by prospective mothers, who placed her image beneath their beds. On the day 7 Zip the Maya held the feast of *Kinich Ahau Itzamna*, and on the following day came the festival of *Ihcil-Ixchel*, when the priests exposed the contents of their bags, including little images of *Ixchel* and the divining-stones called *am*.

The Spaniards came to Cozumel at an early date and occupied it without resistance on the part of the natives. Here Cortes set up the cross and held mass in 1519. However, the islanders retained many of their native ceremonies for

[1] Apuntes sobre la historia de Yucatan. Anonymous manuscript in the Bibliothèque Nationale, Paris.
[2] 1864, p. 195.

years to come, partly because the population was augmented by many natives, who fled to the islands to avoid the persecution of the mainland. In 1639, Sanchez de Aguilar reported that the Indians of Cozumel held their native dances and sacrificed a dog before embarking for the mainland. When he took the *cura* of Cozumel to task for allowing this, he was told that any priest who attempted to stop them would be upset in a canoe "accidentally" in deep water, as indeed actually happened to the successor of the informant and cost him his life.

We have already seen that Cozumel was repeatedly raided by pirates during the seventeenth century. When visited by Stephens in 1842 it was deserted. Since that time the population has gradually increased. To-day it is said that more than half of the people are Cuban rather than Yucatecan in origin.

SAN MIGUEL (COZUMEL).

The ruins near the present town of San Miguel are probably those described by Juan Diaz in a passage previously cited (p. 14). In modern times they have been visited by Stephens, the Le Plongeons,[1] Arnold and Frost, Holmes, and Howe, who called the ruins here described "Santa Rita Ranch."

Near the modern village of San Miguel are the crumbling remains of a Spanish church, built and abandoned no one knows when. In front of the church Stephens[2] describes a "building raised upon a terrace, consisting of a single apartment, 20 feet front and 6 feet 10 inches deep, having two doorways and a back wall 7 feet thick. The height is 10 feet, the arch is triangular, and on the walls are the remains of paintings." In 1895, Holmes found this edifice a "shapeless mound."

FIG. 164.—Building at San Miguel, Cozumel Island (after Stephens).

Northwest of this structure and about 200 feet from the sea, Stephens describes another building, now completely disintegrated, which he illustrates by the accompanying engraving. His text reads:

"It stands on a terrace, and has steps on all four sides. The building measures sixteen feet square; it had four doors facing the cardinal points, and, as will be seen by the figure of a man sitting on the steps, it is very low. The exterior is plain stone, but was formerly stuccoed and painted, traces of which are still visible. The doorways open into a narrow corridor only twenty inches wide, which encompasses a small room only 8 feet 6 inches long and 5 feet wide, having a doorway opening in the centre."

[1] Casual references to the ruins will be found in Mrs. Le Plongeon's "Here and There in Yucatan."

[2] 1843, vol. II, p. 373.

Stephens identifies this building with the "towers" seen by Grijalva.

About a mile north of San Miguel, Holmes[1] notes the presence of two other buildings several hundred yards from the shore.

[One of these was a] "pyramidal mass some 60 feet long by 40 wide, and 25 feet high, with traces of a temple on its summit, and a minute, nearly obliterated chamber with a small doorway of the usual character, near the base at one end. The other (fig. 166) is a little farther on and proved to be of great interest though in an advanced state of ruin . . . .

"The terrace on which the temple stands is 4 or 5 feet high, 20 feet in length from north to south, and, as nearly as can be ascertained by present exposures, about 20 feet wide. The facing has been of hewn, or partially hewn stone, somewhat irregular in form but well laid in mortar. No trace of a stairway is visible. The temple was perhaps not over 16 feet square, and contained an outer room or corridor 10 feet in length by 4 in width, and 2 small chambers back of it, one of which was 5 by 7 feet in horizontal dimensions (see fig. 166). The full height of the rooms was little more than 6 feet; the walls are little more than 2 feet thick and the arches, as usual, are formed by the gradually approaching side walls, held together at the top by slabs of stone forming a narrow ceiling. Small portions of the roof, constructed of stone and covered with cement, still remain.

FIG. 165.—Temple at San Miguel, Cozumel Island (after Holmes).

"The distinguishing feature of this little temple is the remarkable column which has sculptured upon its front the large, ape-visaged figure shown in figure 165 . . . . The figure is that of a female, and is possibly the only remaining representative, so far as discovered, of the idolatrous sculptures so generally cast out of the temples by the Spaniards. The figure, column, and capital are all in one piece, which is of the ordinary porous limestone. Originally the surface was covered with plaster and paint. In parts protected from the weather as many as six successive layers of plaster are seen, each application in turn having received a coat of red, blue or green paint, which would seem to indicate a somewhat long-continued occupancy of the building. Encircling the front of the column over the sculptured head are painted or imprinted four red hands, a feature occurring with considerable frequency in the ancient Maya structures. The lintel stones, two of which remain in place, are large and evenly cut on the exposed

[1] 1895, p. 65.

sides, and these and all the walls have been finished, as was the sculptured column, in plaster and washes of color."

The figure sculptured on the pillar is certainly not common, although we recall others at the ruins of Dsecilna.[1] Their rarity is probably due to the fact that similar figures in stucco have flaked off.

Arnold and Frost report that these buildings have been used as stone quarries within recent years. In the town of San Miguel they saw large piles of stones which had been taken from the ruins, including "a remarkable carving representing a figure of a god seated cross-legged, in true Buddhist attitude, in a niche."

EL CEDRAL (COZUMEL).

Fifteen miles down the west shore of Cozumel from San Miguel and 3 miles from the sea lies the little village of El Cedral, also the site of aboriginal ruins. Holmes[2] writes:

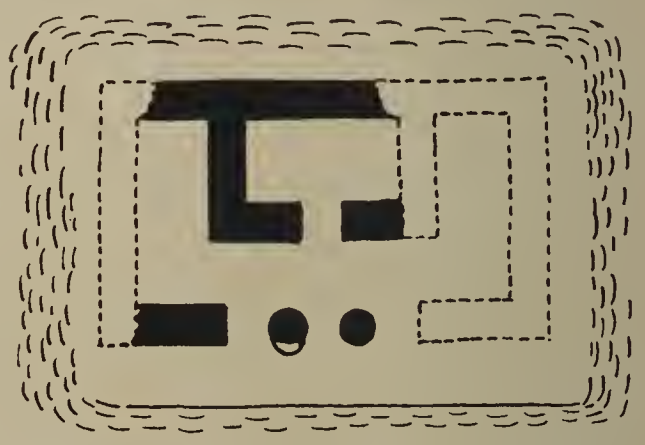


FIG. 166.—Ground-plan of small temple at San Miguel (after Holmes).

"Here two fairly well preserved structures were encountered, while others, almost wholly destroyed by modern builders, were traceable, thus indicating an ancient occupancy of more than usual importance. In the centre of the village is a small temple resembling somewhat that on Mugeres island . . . . It occupies the margin of an ancient terrace some 5 feet high, 100 feet long on the front and considerably less in width. Beside it on the other margin of the terrace is the village church . . . . The ground plan of the ruin shows two oblong chambers, each about 4 feet 6 inches in width, 16 feet in length, and 10 feet high. The front room is entered by a centrally placed outer doorway, now much broken down, while the inner room is reached by a second doorway directly behind the first. The interior walls are 6 feet high to the spring of the arch, and above this the opposite sides approach each other, reaching the ceiling stones some 4 feet higher. The inner door is 4 feet 6 inches high by 2 feet wide. The lintel stone, 6 inches thick and 3 feet long, is set back a few inches, leaving a shallow depression in the front which was plastered and is said by the oldest inhabitants of the village to have been covered with painted figures or glyphs. The exterior walls and roof are for the most part well preserved, and the whole construction is uniform in character with other buildings of its class.

"A similar structure containing but one chamber is found about a quarter of a mile from the village. Near it and on the same broken down terrace, which is perhaps 25 by 45 feet in horizontal dimensions, and 4 feet high, are the foundations of another similar building. The standing temple or house is only 10 by 15 feet in dimensions and the single room is about 5 by 9 feet. The door, walls and arch are as usual. The section, fig. 167, extending from front to back, indicates approximately the construction. The rather roughly laid exterior walls were plastered, and the surface varied by two bands of moulding, the lower 5 feet from the ground and the upper at the top, the whole height being 10 or 11 feet."

---

[1] Maler: Teobert Maler und seine Erforschung der Ruinen Yukatans. In Globus, vol. LXVIII, No. 18, Oct. 1895, p. 283 and plate 19.

[2] 1895, p. 68.

At the southern margin of the village was a court some hundred feet square, inclosed by the remains of four buildings from which the veneer of stones had been stripped by the modern villagers. The archway shown in figure 168 opens through the northern tier of buildings near the west corner. It is 10 feet high, 6 feet wide, and 8 feet thick. On the east side of the court, near the north end,

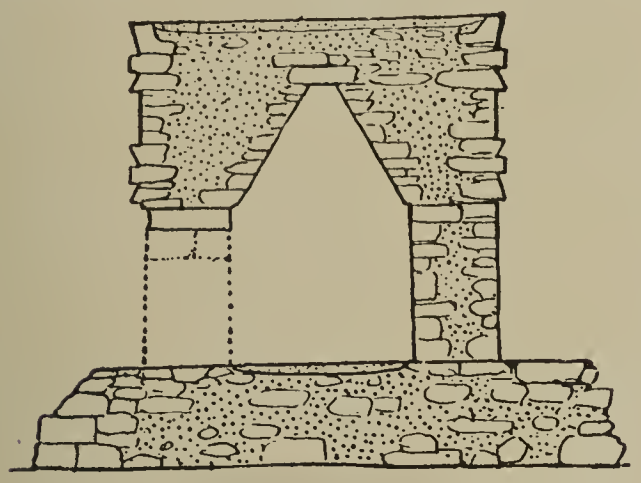
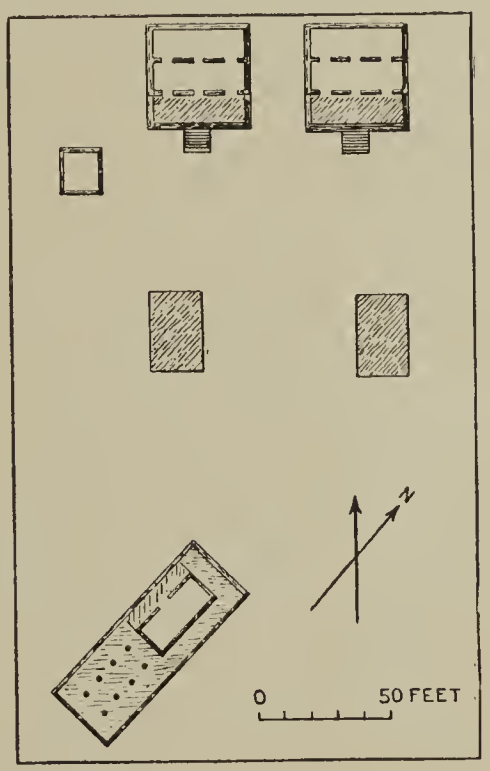


FIG. 167.—Section of a building near El Cedral, Cozumel (after Holmes).



a

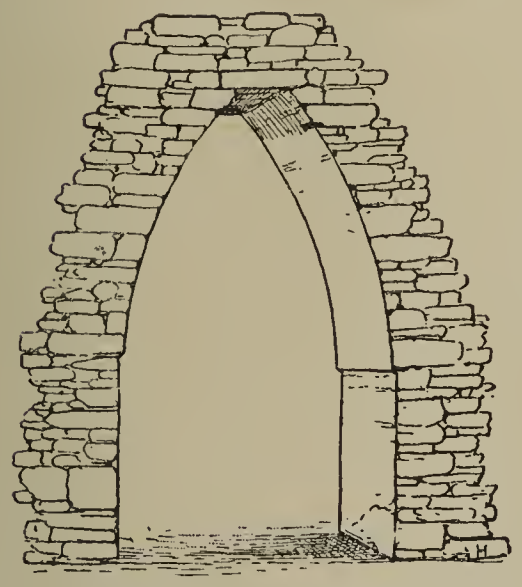
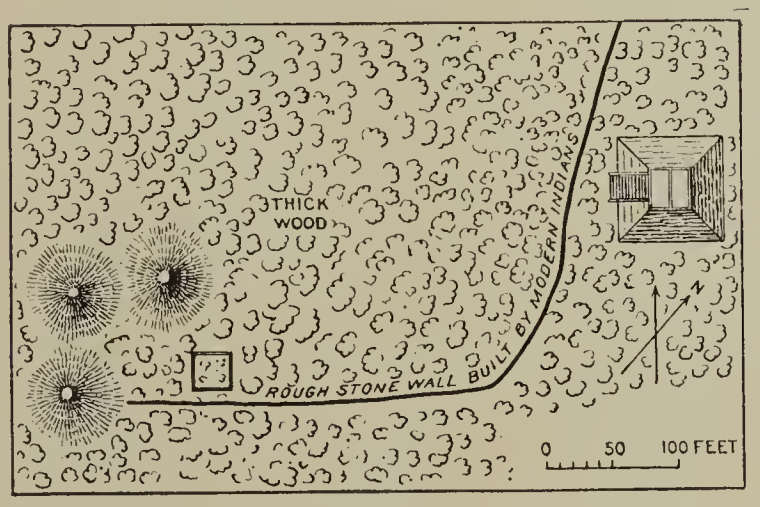


FIG. 168.—Archway in quadrangular ruins in the village of El Cedral (after Holmes).



b

FIG. 169.—Ruins of San Benito, Cozumel (after Arnold and Frost).

is a second arch in a very ruinous condition. The southern building contained a number of round columns. At the northeast corner is a ridge of débris 6 feet high, 20 feet wide, and 60 feet long, which extends to the northeast. Near the center of the court is another fallen structure some 20 feet square.

SAN BENITO.

The English travelers Arnold and Frost[1] crossed from San Miguel, at the northwest corner of Cozumel, to the east coast of the island. A few miles before

[1] 1909, p. 174 *et seq.*

their trail reached the coast they came to a spring known as San Benito, near which were the "relics of an Indian town," which they did not describe. They searched the interior of this part of the island for some time, however, and discovered two groups of ruins which are discussed in detail. These remains are between San Miguel and San Benito.

Group 1.—The first group of ruins (fig. 169, *a*) consisted of six structures. At the north end were twin buildings "standing a few yards apart on small terraces about 8 feet high and facing southeast. Both two-roomed, they each measured 40 feet by 27, a small platform extending towards the southeast making each terrace a solid block 40 feet square." These edifices were unornamented save the interior of the eastern one, which bore imprints of the red hand set in a "scrollwork pattern of the same tint, giving it the appearance of a frame."

"Fifty yards in front of these two buildings stood a third facing west and measuring 80 feet by 30 and consisting of a small one-roomed house and a pillared temple, the roofs of which had both fallen. Here, as at Cancun, we were struck by the prevalence of the rounded pillars. Half-way between the first and second ruins were the remains of two more buildings, but these were so shattered as to defy any attempts at a suggestion of what they had been like. At the back of the first set, standing isolated in the bush, was a remarkable monolithic rounded pillar close on 9 feet high."

This column may have been a stela, once plastered and painted, or perhaps one of the whipping-posts which the Indians are said to have set up in the Yucatec towns.

Group 2.—The second group of ruins (fig. 169, *b*) stood three-quarters of a mile westward of those described. They consist of three large juxtaposed mounds with no traces of building on the top, but with a small single-roomed structure at the base of one of them. This type of constructuion has already been described on the mainland at Tancah and Xelha. About 100 yards from these mounds was a pyramid with a single stairway surmounted by a two-roomed building. This had unusually small doorways and was devoid of decoration.

In the general vicinity of these ruins remnants of stone walls were encountered in the bush. These doubtless were like the ones observed near Tulum and were the boundaries of cleared fields or house-lots, although they may have been defensive in character, as is suspected by Arnold and Frost. Several finds of axes, pottery, beads, etc., were made in the ruins.

A NAMELESS RUIN.

Prince William of Sweden,[1] who visited Cozumel in 1920, describes a ruined city in "the interior of the island" in the following words:

"In a newly cleared space lay a number of ruins of typical Maya buildings and pointed burial mounds. All were in a sad state of decay. The largest, which the Indians called 'The Church,' lay apart, on a little elevation, with distinct remains of a surrounding circular wall. Two-thirds of the height of the wall was decorated with a simple frieze. The building was sufficiently well preserved to enable one to enter through a narrow aperture. Nothing was to be seen within, however, but bare walls, and hundreds of bats, that flew into the faces of the obtruders.

[1] 1922, pp. 97, 98.

"In one of the smaller temples the sacrificial altar was still remaining . . . . On the floor lay a large stone, shaped like a keyhole, presumably a piece of ornamental work which had been set up above the door. We dug through and examined the place, unearthing a number of fragments of bone and earthware."

Measurements and photographs of this ruin have been deposited in the Riksmuseum at Stockholm.

OTHER REMAINS ON COZUMEL.

Other ruined cities undoubtedly exist on the island of Cozumel, incompletely recorded or still awaiting discovery. Mrs. Le Plongeon speaks of small buildings standing within sight of the west coast, at one of which was a stone snake's head.[1] In 1851, Mr. James Kennedy visited the island and opened several tombs the locality of which is not stated. Burial furniture included chipped-stone implements, copper implements, figures of divinities with hawks' heads, images of turtles, incense-burners, and pottery vases.

FIG. 170.—Two-storied shrine at the ruins of Cacakal.

CACAKAL.

During the recent war with the Santa Cruz Indians the Mexican Government constructed a railroad, known as the Ferrocariles Nacionales de Quintana Roo, from Vigia Chico on the coast to Chan Santa Cruz, the Indian capital. To prevent the trains from being rushed by the Indians, it was necessary to clear the jungle on each side of the road for 100 feet. On the south side of the track at kilometer 42 (station D) in this *campo del tiro* is a group of ruined buildings which were visited by the Carnegie Institution expedition of 1918.

The only edifice still standing is a small two-storied shrine set on a low platform with the main aspect facing west. There are four doorways on the ground floor, each having the usual recessed lintel. The room thus entered is almost completely blocked by a large masonry pier, formerly painted bright blue, which was erected to support the upper story. The passageway around this pier is little over a foot wide and 3 feet high. The second story, which has but one door, is directly superimposed on the lower story—a feature but rarely found in Maya architecture.

[1] 1889, p. 37.

Definite information was obtained that a cross 3 feet high had surmounted this building when it was discovered by the Mexicans in 1902. In fact, it is said that General Manuel Sanchez Ribera placed camp D at kilometer 42 for this reason. It is also said that in 1902 there were four other two-storied edifices standing, though only this one had a cross on top. A short distance south of the structure described is a platform mound 27 feet long, 16 feet broad, and 3.5 feet high. Numerous other mounds are near by.

Near the edge of the *campo del tiro* is a partly artificial reservoir one hundred odd feet across. Advantage had obviously been taken of a natural depression, which was inclosed in roughly laid walls.

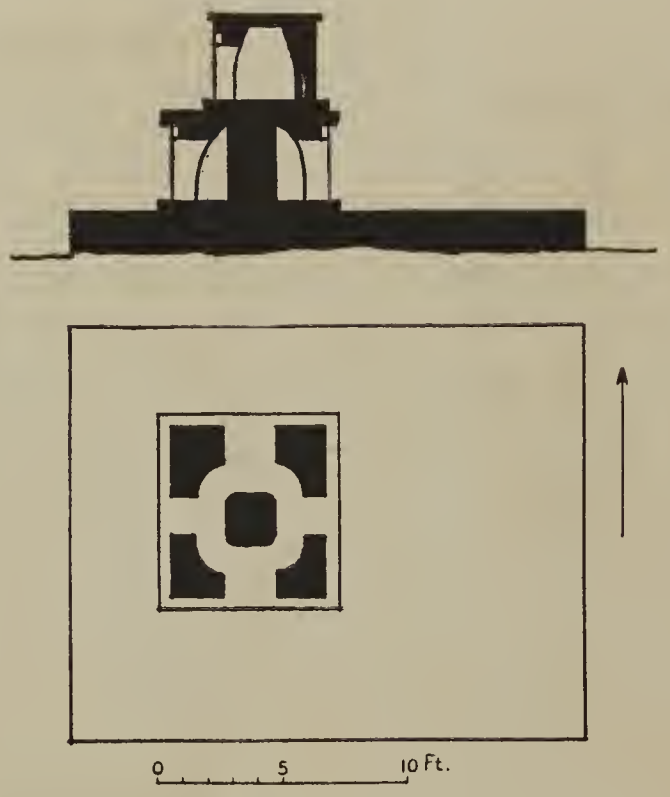


FIG. 171.—Plan and cross-section of shrine, Cacakal.

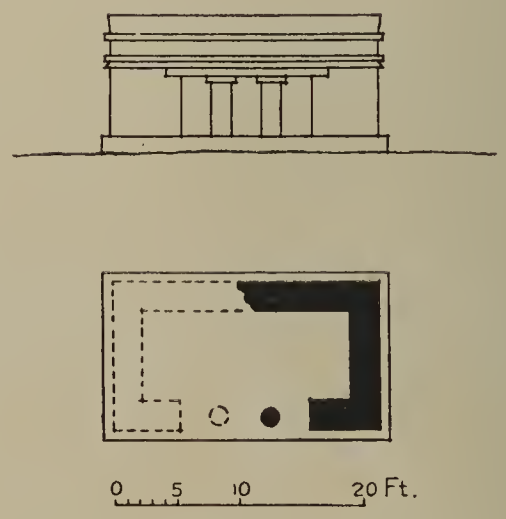


FIG. 172.—Plan and elevation of temple, Nohku Point.

NOHKU POINT.

On Nohku or Bird Point, just outside the southern end of Ascencion Bay, is a small temple over half of which has fallen (fig. 172). There probably were two columns in the doorway, although only one is now visible. The door panel and moldings are of the usual east-coast type and the flat ceiling has fallen.

CHACMOOL.

This city is named from the large statue in front of the principal temple, which belongs to the type thus fancifully named by Le Plongeon. The ruins are situated some three or four hundred yards inland from a small harbor just north of the Point, known locally as Santa Rosa. The principal group consists of an assemblage of nine structures, as well as others scattered through the neighboring jungle. Architecturally, the city presents little that is new. It is marked, however, by the use of stone columns in five of its nine buildings. This series represents the transition from the vaulted two-room building to the open colon-

nade. The absence of lofty substructures is also noteworthy, for the tallest in the city is only 5 feet high. Moldings are relatively simple and in keeping with the low, squat façades. Every indication points to this city's being of late date.

The survey of Chacmool, made in 1918, makes no pretense at completeness, and the short account we are able to give is subject to correction in the light of further field work.[1] We have not reproduced individual ground-plans from this site, but these may be seen on the general map of the ruins on fig. 173.

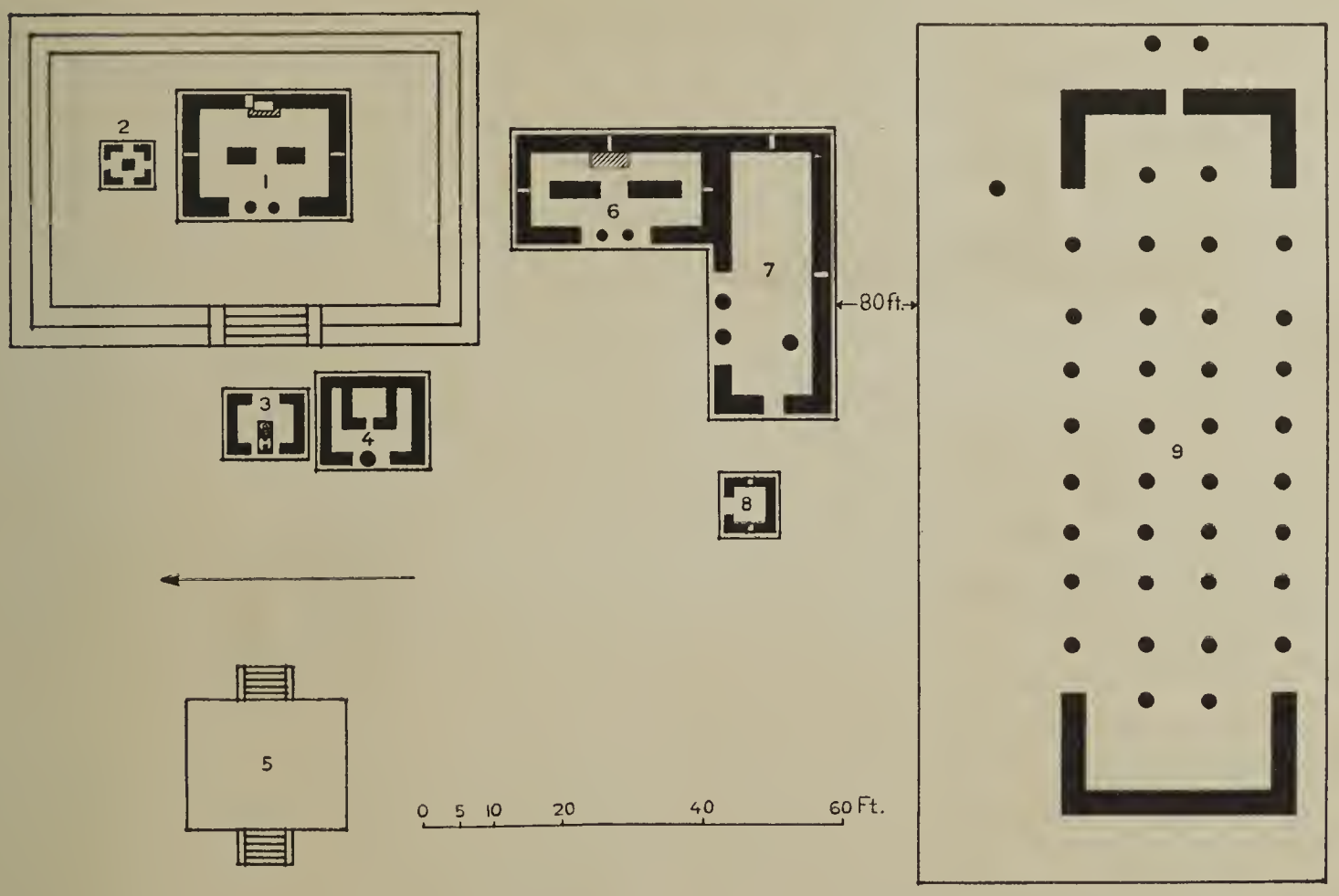


FIG. 173.—Map of the ruins of Chacmool.

Structure No. 1.—The principal temple at Chacmool stands on a low terraced pyramid, the only one at the site. On the west side are badly ruined stairs. The temple stands on the south side of the pyramid, while on the north is a shrine (structure 2). The façade (plate 27, c) is adorned by one rectangular molding, and the sunken panel above the entrance is set well below this. Within are two vaulted rooms separated by masonry piers; the capstones of the vault are but 7 feet above the floor. In the center of the back room, in place of the customary altar, is what appears to be a fireplace. This consists of a niche in the wall, rising from the floor, with a fire-wall in front to retain the embers. Above this and a little to the left is another recess, into the upper part of which opens a window.

[1] Dr. T. W. F. Gann recently informed the writer that information has reached Belize that the center of this city lies about half a mile north of the group of buildings here described.

Structure No. 2.—On the northern half of the pyramid supporting structure 1 is a shrine, which is shown on plate 27, c, and figure 174. This little building has four doors and a rectangular molding. The interior is largely occupied by a masonry pier, after the fashion seen at Cacakal, where there is a second story.

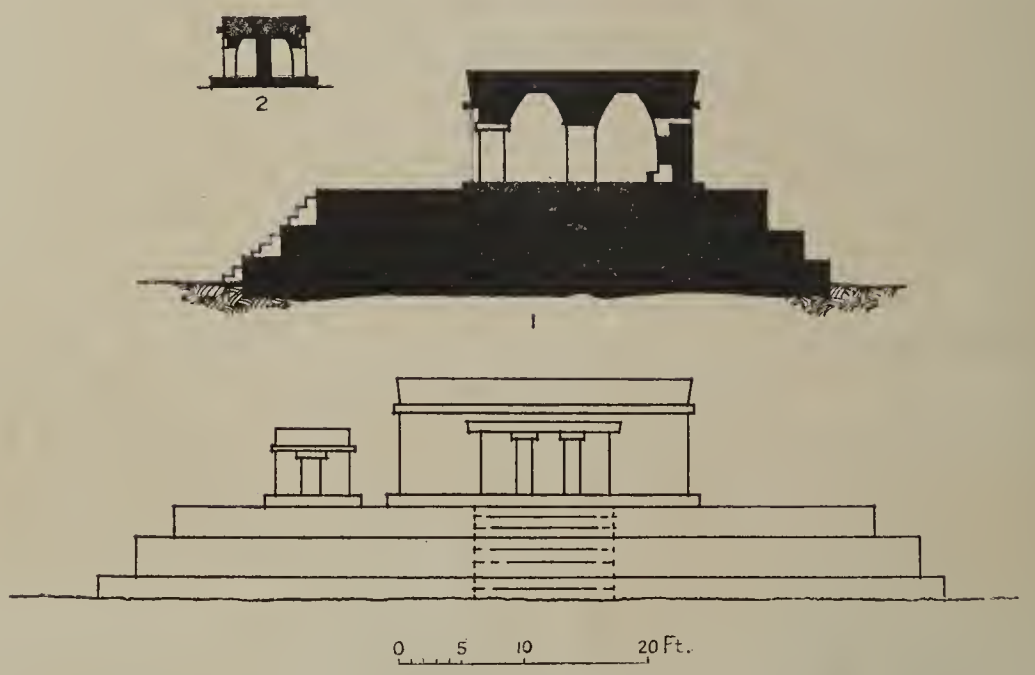


Fig. 174.—Elevation and cross-section of structure 1, Chacmool.

Perhaps there once was one at Chacmool, but it must have been of perishable materials, for no trace remains to-day.

Structure No. 3.—In front of the stairway of the principal temple is an edifice which serves as a formal arch or entrance. It is a small rectangular affair with large arched doorways in line with the steps. Plate 27, B, shows the western side, with the façade of structure 1 in the background. It will be noted that the walls

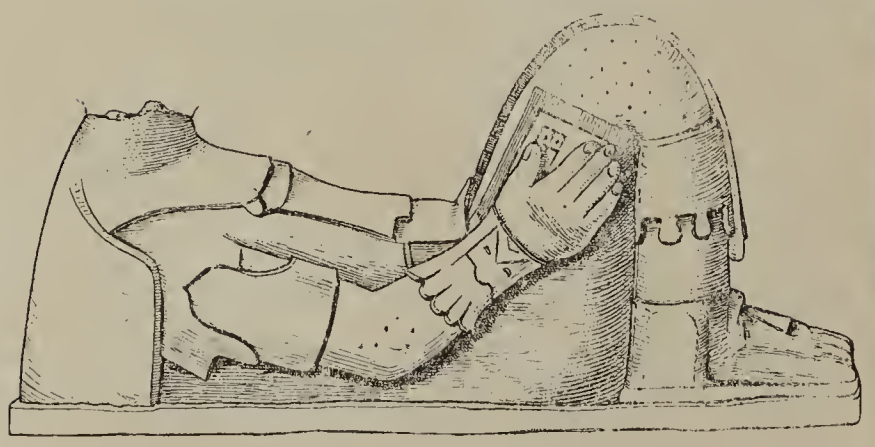


Fig. 175.—Chacmool statue, structure 3.

Fig. 176.—Legs of Chacmool figure.

flare markedly outward and that the vaulted entrances are topped by a sunken panel, like the south gate in the Inner Inclosure at Tulum.

In the middle of the west doorway is the large statue from which the city has been named, for this figure is of the type first discovered by Le Plongeon at Chichen Itza and by him called Chacmool in honor of the fanciful hero whom he

A, structure 1, Xelha. B, structures 1 and 2, Chacmool. C, structure 3, Chacmool.

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believed it depicted. These statues in general represent a man lying on his back with knees drawn up and head turned to the right. The head of this example has been broken away, and the bowl, usually clasped in the hands on top of the body, is absent. A large gorget or breastplate is suspended from the neck, and both the arms and legs are adorned with heavy bands. On the feet are sandals. This figure probably is not cut from a single block of stone, like others of its type, but rather consists of stucco laid over a stone framework, like the architectural bas-reliefs.

The earliest statue known of the Chacmool type is the example discovered by Professor M. H. Saville at Quirgua and now in New York. This specimen is cut from the stone used at Quirgua for the stelæ, but not employed in the temples erected after the dated stelæ. From this fact we judge the type to be early, a surmise confirmed by its appearance in certain crude statues in the Guatemalan Highlands and elsewhere.[1] The distribution is extremely wide, embracing northern Costa Rica, Salvador, Guatemala, Yucatan, and central Mexico. In general it may be said that, although a purely Maya conception, they are usually of Toltec workmanship, for most examples have come from regions inhabited by the Toltecs, and at Chichen Itza (where several other specimens have turned up since Le Plongeon's find) they are definitely associated with Toltec art. We believe that the type was borrowed by the Toltecs from the Maya and centuries later was introduced into Yucatan by the Toltecs. The presence of the statue on the east coast is proof of strong Toltec influence, if, indeed, it does not attest the presence of Toltec worshipers.

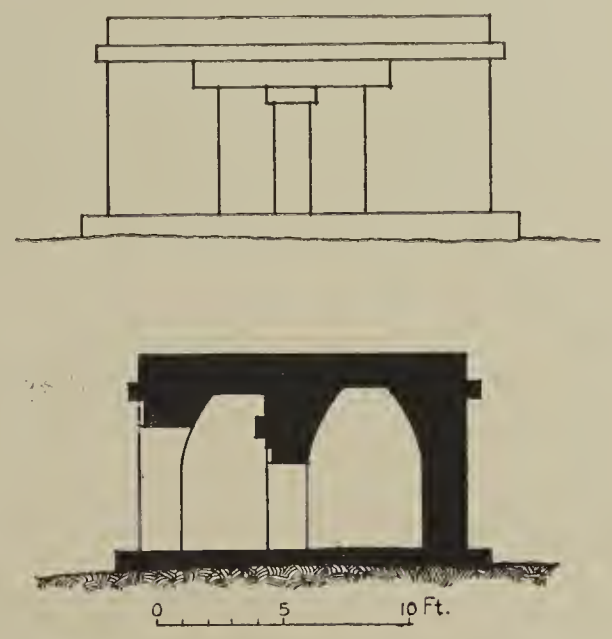

FIG. 177.—Cross-section and elevation of structure 4, Chacmool.

Structure No. 4.—Next to the portal covering the Chacmool statue is a small temple which faces outward from the substructure of temple 1. It contains an inner chamber, which appears to have been once an independent building, around three sides of which has been built a corridor, in the fashion of the Temple of the Frescoes at Tulum and structure 10 at Tancah. The outer doorway is divided by a single round column, one of the few instances on the east coast where door-columns are not set in pairs. The capital of the column is square. A second door leads to the interior. On the rear wall are traces of stucco figures.

Structure No. 5.—This is a platform mound 5 feet high, which stands in line with the steps of temple 1, but more distant than the formal gateway. It has steps on the east and west sides. Both in type and location it is in keeping with the platform mounds in front of the principal temples at Tulum and Xelha.

[1] These crude statues are known to be early, because related types have been found in the foundations of dated stelæ at Copan. See S. K. Lothrop, "The Stone Statues of Nicaragua," in the American Anthropologist, N.S., vol. XXIII, 1921.

Structure No. 6.—This temple stands beside structure 1, which it closely resembles. Contiguous to it, but at right angles, is structure 7, the two apparently forming the corner of a courtyard. Structure 6 is a low, squat building with a two-member molding (fig. 178). The lower member of the molding has been

Fig. 178.—Façade of structure 6, Chacmool.

cut away from the door to give space for the usual sunken panel. The doorway is divided by two round columns with square capitals. Lintels, both inside and out, are of wooden beams. Within are two vaulted rooms, featureless save for an altar and three windows in the back room.

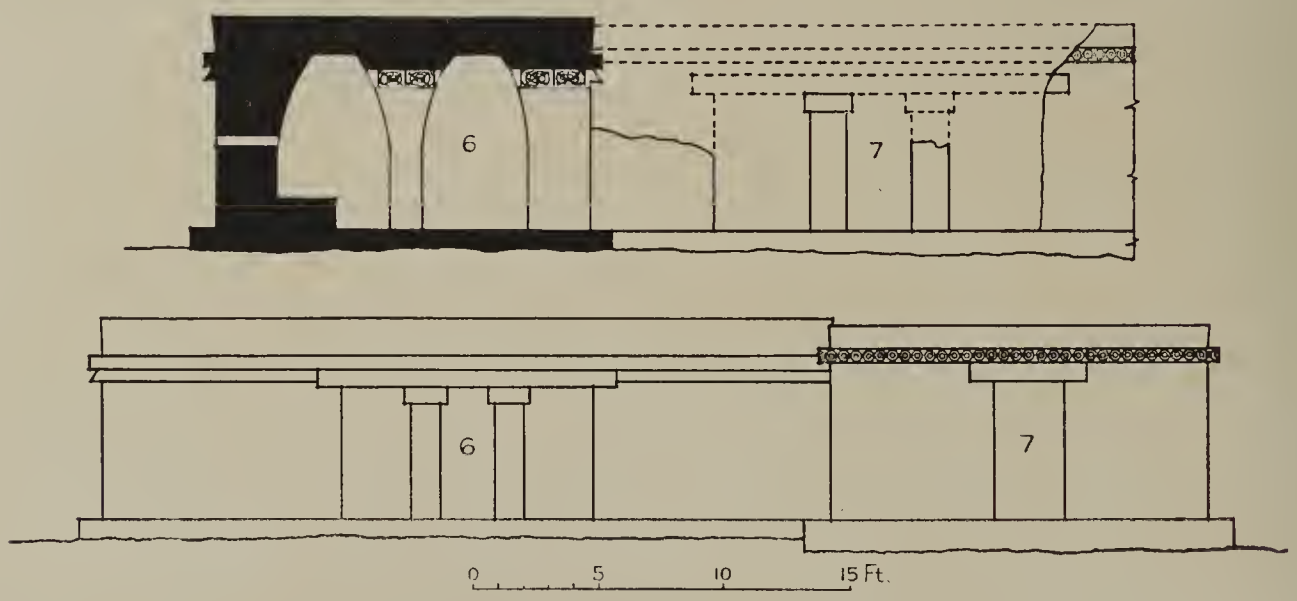

Fig. 179.—Plans of structures 6 and 7, Chacmool.

Structure No. 7.—Across the south end of structure 6 a large single-roomed edifice was built, which to-day has crumbled badly, for the flat ceiling has fallen, carrying away with it a large part of the side walls. The principal entrance, divided by two columns, is in the north façade, and there is a doorway in the west wall. There is a single rectangular molding adorned with a line of concentric circles. The interior room is roughly 36 feet long and 10 feet wide, with a single

column in it, unsymmetrically placed, which may have been a later introduction to strengthen the ceiling, like the column and pier in the back room of structure 25 at Tulum.

Structure No. 8.—At the west end of structure 7 is a shrine with one doorway on the northern side and a rectangular molding. The masonry of this building is unusually crude.

Structure No. 9.—To the south of the group already described is the largest and most unusual building at Chacmool, a columned hall with two open sides. The substructure is 124 feet long and 59 feet wide, the major axis running east and west, and the building itself was 102 feet long and 30 feet wide. On the east and west ends there were walls, but the rest of the hall was supported by four rows of columns. The central rows have ten columns and the outer rows eight. In the east wall there is a door, in front of which are two columns. There is also one column in front of the building at the east end of the north façade. The flat ceiling of this building has fallen, carrying with it part of the walls and many of the columns themselves.

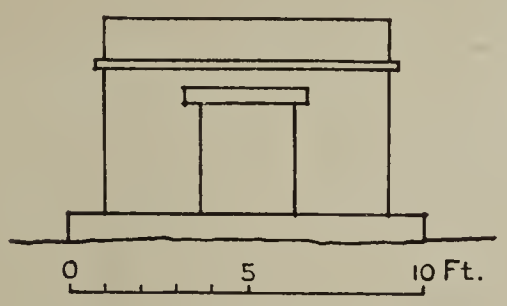

FIG. 180.—Elevation of structure 8.

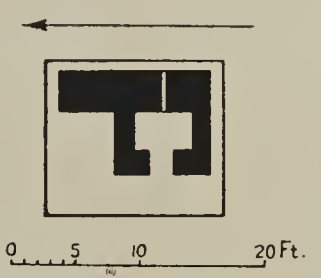

FIG. 181.—Plan of temple, Canche Balam.

CANCHE BALAM.

On the south side of Espiritu Santo Bay, about 3 miles from the lighthouse on Herrero Point, is a site known locally as Canche Balam. At this place is a small Maya temple standing on a platform 5 feet high. The walls of the building have fallen above the level of the molding, but on the portion still standing are at least nine layers of plaster. The doorway is less than 1.5 feet wide and is capped by a sunken panel. Various plaster layers in the panel showed traces of red and blue paint. To the south of the door several imprints of the red hand are seen on the outer wall of the building.

The most interesting constructional feature is the back wall, which is extraordinarily thick and is prolonged for a few feet beyond one end of the building. Its function is not clear, but probably it served to support something which has now fallen, possibly a roof-comb or second story.

OTHER RUINS.

The remains which have been described are those examined by expeditions of the Carnegie Institution or of which published accounts are available. Other unexplored cities are known to exist. One of these was seen from the sea by the

Carnegie Institution expedition of 1916 on the coast to the north of Tulum and Tancah. We had lost our bearings during the night and towards morning the lighthouse on Cozumel came into view. Our boat was consequently turned towards the mainland; we approached the shore shortly after sunrise and soon passed

Fig. 182.—An unnamed ruin north of Tulum.

close enough to a pyramid temple to secure the photograph seen on figure 182. Howe's report on Tulum speaks of ruins at Ina and Tamul. The former is on the mainland north of Playa Carmen and the latter is on the island of Cancuen. Large jungle-buried cities also are said to lie in the interior and are known only to the independent Indians.

CHAPTER VI.

CONCLUSIONS.

We have now described in detail the various remains on the east coast of Yucatan and shall proceed to discuss their significance. We shall first distinguish the east-coast culture as a whole from other Maya types and shall then discuss the chronology of this region in relation to other parts of the Maya area and to Maya history.

ARCHITECTURE.

The buildings of the east coast in a general way resemble those of other parts of Yucatan, but close examination discloses many differences. In the first place, we find an absolutely new type of building, the shrine, which is quite common and at certain sites appears to have filled an important place in the religious organization. The shrine probably is closely related to the sanctuary, which is also a common east-coast feature; the sanctuary does not occur in other parts of Yucatan, but reappears in the Usumacintla Valley in the neighborhood of Palenque.

The buildings which contain sanctuaries are for the most part of a type peculiar to the east coast, which we have called "palaces," in the belief that they served as residences. The ground plan of these edifices shows a striking similarity to the Palenque temple, but structurally there is a difference. The essential feature of the construction is the use of a flat ceiling supported by wooden beams and covered with a rubble cap. Closely associated with the flat ceiling is the presence of columns in the doorways and also in the interior of the building. The effect of these innovations is that the rooms are much wider and more brilliantly illuminated than is possible with the vaulted ceiling.

Other features are also peculiar to east-coast architecture. Among these we should mention the step which runs completely around the majority of the buildings, whether they stand upon the ground or on lofty artificial substructures. Over the doorways, practically without exception, we find the lintel set back a few inches into the wall, forming a sunken panel; the relation of this panel to the lower molding forms one of our criteria for stylistic dating. Above the sunken panel and directly over the door there may be a vertical niche containing bas-relief sculpture. Small figures carved in the round are sometimes placed on the edge of the roof. Finally, we must mention certain roofs which rise in terraces and always carry a roof-comb. These characteristics which we have enumerated are all peculiar to the east coast and serve to distinguish it from other parts of the Maya area.

In estimating the general merit of east-coast architecture, we find that the buildings lack the dignity and severity of line which are seen elsewhere. In general, the elaboration—perhaps we should say the over-elaboration—of decorative detail seen on Maya edifices is lacking, but there is no corresponding gain in broadly achieved effects and there is but little appreciation of the value of mass. The weakest feature is perhaps the moldings, which often do not harmonize with the

façade. To sum up, in a word, the architecture of the east coast is in all ways thoroughly provincial.

SCULPTURE AND PAINTING.

East-coast sculpture chiefly takes the form of stucco relief executed over a framework of stone. While the neatness of the exterior finish and the abundant use of color serve to make a presentable product, yet this art decidedly lacks the boldness of line and vigor of presentation which we associate with Maya sculpture elsewhere. Again the provincial character of east-coast art is apparent.

Frescoes, however, of which an unusually large number have survived, are painted with a fine quality of line and discriminating use of color. The style is evidently restrained by the customary conventions of depicting religious subjects, so that it is perhaps not fair to make comparisons with the freely rendered attitudes of the Chichen Itza frescoes, where scenes from daily life are depicted. We should rather make comparisons with the three surviving Maya codices, in all of which the subject-matter is somewhat similar to that of the wall-paintings. Passing judgment on this basis, we find that the east-coast frescoes rank very high, for they are decidedly superior to the Madrid codex, certainly equal to the Peresianus, and but little inferior to the Dresden codex, which at present is regarded as the high-water mark of Maya religious painting.

CHRONOLOGY.

COLONIZATION PERIOD (433–689 A. D.).

The period during which the Maya first occupied Yucatan is known as the Colonization Period. It is roughly contemporaneous with the Great Period of the Old Empire cities of the south and may be dated in the time system then prevalent from 9.13.0.0.0 to 10.6.0.0.0. According to the books of Chilam Balam, the first settlements were made in the province of Bachalal, in southeastern Yucatan, and at Chichen Itza, in the north-central part of the peninsula. Archæological evidence shows that the entire east coast was colonized at this time, for at Tulum stela 1 bears the date 9.13.10.0.0, and on Cozumel Island a stylistically similar stela has been found.

There are no other remains of this period. We therefore judge that the new cities were small, that they were built of perishable materials, and that, like Chichen Itza, they were abandoned, to be reoccupied several centuries later.

DARK AGES (689–985 A. D.).

No remains from this period have yet been discovered on the east coast. Whatever population dwelt there can scarcely have lived on a high plane of culture.

PERIOD OF THE LEAGUE OF MAYAPAN (985–1201 A. D.).

This epoch witnessed the second rise to greatness of the Maya, and to it must be attributed some of the most splendid architectural remains elsewhere in Yucatan, but on the east coast there is comparatively little that can be assigned to it. At Tulum no edifice still stands which we can surely date from this time. Structure 59, to the north of the Great Wall, has a roof-comb which makes it seem comparatively early, but in other respects it conforms to the buildings of a later

epoch. We are perhaps justified in placing it towards the close of the period. Structure 57 nearby also seems early; so there is ground for belief that an early settlement stood outside the north wall. At Tancah, the two buildings with roof-combs (structures 6 and 12), the lower range of structure 1, and the inner room of structure 10 may all date from this period. At Xelha, structures 1, 2, 19, and 21 appear equally old. We believe that the buildings at Tancah and Xelha are older than those at Tulum, because they lack distinctly Mexican features, which were introduced during the next period, and especially because the palace type of building is totally absent. Other remains of the epoch are perhaps to be found on Cozumel and include the walled-up building under the chief temple at El Meco.

TOLTEC PERIOD (1201–1458 A. D.).

The second half of the Renaissance in Yucatan is marked by the political dominance of the Cocomes, lords of Mayapan, and by the advent of Mexican mercenaries who introduced new elements of culture. To this period we attribute the majority of east-coast remains.

The Toltec period has been chiefly studied at Chichen Itza, where the evidence of Mexican occupation is historical as well as archæological. Spinden,[1] in analyzing the art of that city, selects the following features as purely Mexican in character:

Architectural:

a. Serpent-columns and serpent-balustrades.
b. Openwork decoration on top of temple-walls.
c. Sloping or battered bases of temple-walls.
d. Platform mounds with colonnades.
e. Flat roofs.
f. Ball-courts.
g. Atlantean supports.

Artistic or Religious:

a. "Chacmool" sculptures.
b. Sun-disks and "celestial eyes."
c. Speech-scrolls.
d. Feathered monsters in front view.
e. Processional groupings of warriors with identifying-glyphs.

Some of these features are not found on the east coast, and it is perhaps noteworthy that the architectural forms are more common than the artistic and religious.

Serpent-columns we have seen at Tulum and Nisucte and serpent-balustrades at El Meco. These forms are both common at Chichen Itza, but are found nowhere else. The closest parallels in Mexico are the huge columns excavated at Tula by Charnay. The best-known examples at Chichen Itza are found on the Castillo and the Temple of the Tigers.

Openwork decoration on the tops of the walls, such as that seen on the Temple of the Tigers, has not been reported on the east coast, but walls with battered bases occur in the upper story of the Temple of the Frescoes at Tulum and structure 4 at Cancuen. There is a general tendency to slope the walls slightly outward towards the top, not seen in pure Maya architecture elsewhere.

Flat roofs or, more correctly speaking, flat ceilings, often combined with the use of interior and exterior columns, are seen at Tulum, El Meco, Cancuen, El Cedral, San Benito, and Chacmool. The construction of these ceilings has received comment previously, and it has also been pointed out (fig. 5) that the ground-

[1] 1913, pp. 205 *et seq.*

plans of the buildings which contain such ceilings show a continuous development from the single-room edifice to the colonnade without walls. The history of this development is fully illustrated on the east coast and serves to explain the great mound at Ake and the group of the columns at Chichen Itza, which otherwise have no parallel in Yucatan.

Ball-courts are not found on the east coast, and the single example of Atlantean support, at San Miguel on Cozumel Island, is not of the type found at Chichen Itza.

Of Toltec artistic and religious features we have the Chacmool statue at the ruins of the same name and an example of the so-called celestial eye in the upper band on the back wall of the Temple of the Diving God at Tulum (plate 5, B). The other features selected as criteria by Spinden are not seen. There are, however, certain other Mexican details in the frescoes which it would be unwise to call Toltec, as they are equally characteristic, if not more so, of the Aztec period.

The great majority of the east-coast buildings exhibit one or more of the Toltec features we have enumerated or else have stylistic details which link them to the edifices which definitely belong to this period.

FINAL PERIOD.

We shall not attempt to distinguish this short epoch from the Toltec period. It appears to have been a time of civil war, famine, and disease, and probably little creative work was undertaken.

SEQUENCE OF CONSTRUCTION.

Our rapid survey of the various historical periods developed the fact that most of the buildings on the east coast date from the end of the period of the League of Mayapan or from the Toltec period. To further arrange them in order we must abandon our attempt to classify them with the general epochs of Maya history and examine the criteria of age which they present within themselves. We shall chiefly confine our discussion to the ruins of Tulum (afterwards applying our results to other sites), for the reason that there we have a large series of buildings still standing, all of which are accurately measured. Our methods must include an especially careful examination of the features present in the buildings showing several periods of construction.

I. Walls.—A general criterion of age throughout the full extent of Maya architecture is obtained by a study of wall-space in relation to room-space. Applied to a short period like that which we are discussing, this ratio loses much of its force, but still retains some importance. In a general way the east-coast buildings which are believed to be early on other grounds have thick walls and the late buildings have thin walls. In the Castillo at Tulum the late third range exhibits walls notably thinner than the second range (fig. 41), and the outer shell of the Temple of the Frescoes also is thinner than the now-inclosed original construction (fig. 70).

II. Doorways.—The earlier buildings usually have single doorways, while the later buildings, unless very small, have multiple entrances divided by columns.

This is seen in the Temple of the Frescoes at Tulum, where the inner room (once the entire building) has had a column introduced in the door and the outer wall has multiple doorways. It is also illustrated by structure 10 at Tancah.

III. Sunken panels over the doors.—The sunken panel over the door is one of the most constant features of east-coast architecture. One chronological change may be seen: early examples are so placed that they *touch* the lower molding, but later examples are from 2 to 6 inches *below* the molding. This is proved by the Temple of the Frescoes and structure 21 at Tulum, buildings to which additions were made after the completion of the original building. In each case the sunken panels of the main construction touch the molding, but the panels in the added wings are a few inches below the molding. The same distinction appears in the second and third ranges of the Castillo. Here, then, is an important means of dividing buildings of the Toltec period into two groups.

IV. Ceilings.—The usual Maya ceiling was an overstepping vault, and the flat ceiling did not come into use until the Toltec period. We have adduced evidence that the flat ceiling gave trouble before the abandonment of the present ruins and that in two cases at Tulum (the Castillo and Temple of the Diving God) flat-ceiling rooms were filled in solid and vaulted rooms erected above. The vaulted ceiling, then, was either early or very late and the flat ceiling was used during perhaps the greater part of the Toltec period.

V. Moldings.—The three-member molding (a rectangular band flanked by a pair of triangular bands) is *par excellence* the form typical of the period of the League of Mayapan. It does not occur at Tulum, and wherever it is seen, as at Tancah and Xelha, the buildings thus adorned exhibit roof-combs or thick walls or some other criterion of comparatively great age.

The two-member molding (a rectangular band over a triangular band) probably develops from the three-member form. At Tulum it is only found on buildings of the first part of the flat-ceiling period and elsewhere it is only rarely found in combination with the vault.

Of the double moldings, two rectangular bands occur on some of the very early buildings, such as 59 at Tulum, and again on very late edifices, such as the third range of the Castillo. Structure 25 is the only palace described which has this type of molding.

The combination of a rectangular molding placed above the usual two-member form is found at Tulum on the early vaulted buildings and on both early and late flat-ceiling palaces, but not on the late vaulted edifices.

TULUM.

The results obtained by applying these criteria of age to the buildings at Tulum are shown on the accompanying table.

Group I is made up of the early vaulted buildings with thick walls and in one case with a roof-comb. The only edifice I do not feel certainly belongs here is room *h* of the Castillo. It is perhaps noteworthy that with two exceptions—structure 11 and the interior room of 16—all the buildings in this group are placed

on high ground overlooking the sea-cliff and that they are all small and contain but one room. It appears that they represent the temples of a time when the city had started to expand, but before its resources were sufficient to erect large buildings.

Group II is the first part of the flat-ceiling epoch and is definitely within the Toltec period. It is distinguished from the second half of the epoch by the position of the sunken panels above the doors. During the vogue of this style the Inner Inclosure was constructed and about half of the palaces were built, thus laying out the principal streets of the city. The small buildings with flat ceilings of the temple class were all put up at this time.

Group III includes four additional palaces—20, 25, 34, and 35—and several of the other palaces had additional wings constructed.

Table showing sequence of construction at Tulum.

	Walls.	Panel.	Ceiling.	Molding.
Group I:				
11, 16, 59.	Thick.	Touching molding.	Vaulted.	A
1*h*, 9, 45, 57.	Thick.	Touching molding.	Vaulted.	B
Group II:				
1*c–f*, 1*g*, 2, 3, 4, 5, 54.	Medium.	Touching molding.	Flat.	C
10, 21*a–c*.	Medium.	Touching molding.	Flat.	B
Group III:				
20, 21*de*, 34, 35.	Medium.	Below molding.	Flat.	B
25.	Medium.	Below molding.	Flat.	A
Group IV:				
1*ab*, 16, 55, 56.	Thin.	Below molding.	Vaulted.	A

A B C

Group IV, the final phase of construction, consists of vaulted buildings with thin walls and the sunken panel well below the lower molding. In this group are the third range of the Castillo, the outer shell of the lower story and also the upper story of 16, and the two temples on the Great Wall. It is generally thought that the serpent-columns at Chichen Itza were built soon after the coming of the Toltecs, and at Tulum it may be argued that this, the last period of construction, was finished a long time before Grijalva saw Tulum in 1518.

Over half the architectural remains at Tulum are platform mounds. From their alinement they seem coeval with the palaces of the flat-ceiling epoch. Tulum therefore belongs almost wholly to this period. It is the belief of the writer that the major part of the city was erected during the first half of the Toltec period, or, to put it in terms of our own chronology, during the thirteenth and early fourteenth centuries.

We have postponed our discussion of the age of the Great Wall because little

can be said. Obviously several periods of construction are represented by what is seen to-day (see fig. 39), and it is therefore probable that the original wall, now the inner platform, is quite old. The fact that the main street, outlined by flat-ceiling buildings, pierces two gateways may be significant, but both these gateways are vaulted, while the northeast gateway near the Cenote House has a flat ceiling. The only clearly datable features are the two temples at the western angles, which unquestionably are of the same period as the top of the Castillo and therefore extremely late.

TANCAH AND XELHA.

Both these sites are quite different from Tulum and, in the absence of the flat ceiling, most of the criteria applied to that city are worthless. We have already pointed out that the moldings, roof-combs, and plaster count[1] all indicate that certain edifices date from the period of the League of Mayapan. The other buildings may well have been built not so very long afterwards, especially the pyramids surmounted by anomalously small shrines, for these pyramids are stylistically comparable to those supporting buildings with the roof-comb. This point is perhaps important, for it gives a clew to the age of the shrines, for which no pertinent data were obtained at Tulum.

NISUCTE.

The presence of serpent-columns places this site in the Toltec period.

EL MECO.

This site also belongs definitely to the Toltec period, owing to the presence of flat ceilings, colonnaded halls, and serpent-balustrades.

CANCUEN.

The highest development of the colonnaded hall yet reported on the east coast is from this island; so it is probable that the ruins date from well on in the Toltec period. Structure 4 (fig. 160) is a vaulted edifice with a battered base on the exterior walls, stylistically comparable to the final phase of construction at Tulum as represented by the upper story of the Temple of the Frescoes.

COZUMEL.

The ruins of San Miguel and the group described by Prince William of Sweden do not include flat-ceiling buildings, but it would be rash to claim that they were therefore of an early date, especially in view of the unusual door-column at San Miguel. On the other hand, both El Cedral and San Benito exhibit extensive use of columns and flat ceilings and may be definitely assigned to the Toltec period.

CHACMOOL.

This ruin is marked by the presence of a huge colonnaded hall and a statue of the Chacmool type, both indicating the Toltec period. Although most of the buildings are vaulted, none of them appear to be of great age. The panels above the doors of structures 1, 6, and 8 are several inches below the moldings. This we saw to be a late feature at Tulum.

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[1] Twenty-three layers of plaster were found on the interior of structure 10 at Tancah.

ETHNIC PROBLEMS.

Our data on the original settlement of the east coast by the Maya are derived from the books of Chilam Balam. These records show clearly that the Itza and the Xiu created no permanent colonies, and we therefore remain in the dark as to what branch of the Maya people formed the original population.

In regard to the Toltecs, there is ground for the belief that some of them actually penetrated to the east coast. In the first place, there is a statement in the *relacion* of Alonso Ponce, previously quoted (p. 23), that the Itza maintained temples near Ascencion Bay. We take this to mean that they claimed overlordship of the region, the ancient Zamabac. If this was so, the Toltecs might easily have penetrated to the coast after establishing themselves in Chichen Itza, especially as the Itza used the bay as a port for trade with Honduras. A second argument may be based on the legal document quoted on page 9, which states that "Mexicans" settled on the east coast in the Bacalar region and towards Cozumel. Finally, archæological evidence shows strong Toltec influence from Cancuen and El Meco in the north to Santa Rita in British Honduras on the south. Only Chichen Itza exhibits more definite Toltec influence in its architecture. Furthermore, while architectural features may be borrowed by neighbors who admire the style, an actual idol, like the Chacmool figure at the ruins of Chacmool, was probably set up by the hands of his worshipers. It might, indeed, be argued that the Chacmool type is Old Empire Maya and therefore descended directly to the late Maya, but the style of most of these figures indicates that they were erected by immigrants from Mexico.

FUTURE ARCHÆOLOGICAL WORK.

Another field season or two can be spent to advantage in exploratory work of the type on which this book is based, after which it will be necessary to penetrate to the interior to find new ruins. The difficulties presented by the Indian population are fast disappearing and no trouble need be anticipated if they are tactfully handled. Future expeditions should be prepared to take careful measurements at several of the ruins we have mentioned, especially the Cozumel ruins, El Meco, Nisucte, Playa Carmen, and Chacmool. Cancuen has been well studied by the Peabody Museum, although the results have not been published. A feature to which especial attention should be paid is the use of color on walls, and particularly frescoes. To recover these it is necessary to spray the walls to bring out the colors—probably a celluloid solution would be valuable for this purpose—for the lines are often too indistinct to be traced, and direct sketching is not satisfactory, unless intrusted to a highly trained artist.

Excavation should prove both easy and profitable at Tulum; in cleaning stairways for photography we encountered numerous fallen façade ornaments. Vaulted tombs in large numbers apparently are to be found in the platform mounds. The few that we opened had been disrupted by falling vaults or the growth of trees, and while we found but little inside, most Maya tombs are rich in objects accompanying the burial. In the course of future excavations an endeavor should be made to close the long gap between the date indicated by stela 1 at Tulum and the period of erection of the buildings now standing.

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